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CIVIL SERVICE COMMISSION.

CIVIL SERVICE OF INDIA.

EXAMINATION PAPERS

SET AT THE

OPEN COMPETITION

HELD UNDER THE DIRECTIONS OF THE CIVIL SERVICE COMMISSIONERS IN JUNE AND JULY 1878;

TOGETHER WITH

REGULATIONS AND TABLE OF MARKS.

LONDON:

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Regulations.

Civil Service of India, Regulations for the Open Competition of July, 1878.

N.B.—The Regulations are liable to be altered in future years.

1. On June 25th, 1878, and following days, an Examination of Candidates will be held in London. At this Examination not fewer than Candidates will be selected, if so many shall be found duly qualified. Of these, will be selected for Presidency of Bengal, [for the Upper Provinces, and for the Lower Provinces,] for that of Madras, and for that of Bombay.* Notice will hereafter be given of the days and place of Examination.

2. Any person desirous of competing at this Examination, must produce to the Civil Service Commissioners, before the 1st of May, 1878, evidence showing:—

(*a*) That he is a natural-born subject of Her Majesty.

(*b*) That his age on the 1st of January, 1878, will be above seventeen years and under nineteen years. [*N.B.—In the case of Natives of India this must be certified by the Government of India, or of the Presidency or Province in which the Candidate may have resided.*]†

(*c*) That he has no disease, constitutional affection, or bodily infirmity unfitting him, or likely to unfit him, for the Civil Service of India.‡

(*d*) That he is of good moral character.‡

He must also pay such fee as the Secretary of State for India may prescribe.§

3. Should the evidence upon the above points be *primâ facie* satisfactory to the Civil Service Commissioners, the Candidate will, upon

* The number of appointments to be made, and the number in each Presidency, &c., will be announced hereafter. It will probably be about half the usual number.

[It was afterwards announced that 13 Candidates would be selected, 7 for the Presidency of Bengal (4 for the Upper Provinces and 3 for the Lower Provinces), 3 for Bombay, and 3 for Madras.]

† At the Open Competitions to be held in 1879 and 1880, Candidates will be required to be above 17 on the 1st June, and under 19 on the 1st January, of those years respectively. At subsequent competitions they will be required to be above 17 and under 19 on the 1st June of the year in which the competition is held.

‡ Evidence of health and character must bear date not earlier than the 1st April, 1878.

§ The Fee for this Examination will be £5, payable by means of a special stamp according to instructions which will be communicated to Candidates.

payment of the prescribed fee, be admitted to the Examination. The Commissioners may, however, in their discretion, at any time prior to the grant of the Certificate of Qualification herein-after referred to, institute such further inquiries as they may deem necessary; and if the result of such inquiries, in the case of any Candidate, should be unsatisfactory to them in any of the above respects, he will be ineligible for admission to the Civil Service of India; and if already selected, will be removed from the position of a Probationer.

4. The Examination will take place only in the following branches of knowledge:—

	Marks.
*English Composition	300
†History of England—including a period selected by the Candidate	300
†English Literature—including books selected by the Candidate	300
Greek	600
Latin	800
French	500
German	500
Italian	400
*‡Mathematics (pure and mixed)	1,000
Natural Science: that is, the Elements of any two of the following Sciences, viz.:— Chemistry, 500; Electricity and Magnetism, 300; Experimental Laws of Heat and Light, 300; Mechanical Philosophy, with outlines of Astronomy, 300.	
Logic	300
Elements of Political Economy	300
§Sanskrit	500
§Arabic	500

Candidates are at liberty to name, before May 1st, 1878, any or all of these branches of knowledge. No subjects are obligatory.

5. The merit of the persons examined will be estimated by marks; and the number set opposite to each branch in the preceding regulation denotes the greatest number of marks that can be obtained in respect of it.

6. The marks assigned to Candidates in each branch will be subject to such deduction as the Civil Service Commissioners may deem necessary, in order to secure that "a Candidate be allowed no credit at all for taking up a subject in which he is a mere smatterer."

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* Marks assigned in English Composition and Mathematics will be subject to no deduction.

† A considerable portion of the marks for English History and Literature will be allotted to the work specially prepared. In awarding marks for this, regard will be had partly to the extent and importance of the periods or books selected, and partly to the thoroughness with which they have been studied.

‡ The Examination will range from Arithmetic, Algebra, and Elementary Geometry, up to the elements of the differential and integral calculus, including the lower portions of applied Mathematics.

§ The standard of marking in Sanskrit and Arabic will be determined with reference to a high degree of proficiency, such as may be expected to be reached by a Native of good education.

7. The Examination will be conducted by means of printed questions and written answers, and by *viva voce* Examination, as may be deemed necessary.

8. The marks obtained by each Candidate, in respect of each of the subjects in which he shall have been examined, will be added up, and the names of the * Candidates who shall have obtained a greater aggregate number of marks than any of the remaining Candidates will be set forth in order of merit, and such Candidates shall be deemed to be selected Candidates for the Civil Service of India, provided they appear to be in other respects duly qualified. Should any of the selected Candidates become disqualified, the Secretary of State for India will determine whether the vacancy thus created shall be filled up or not. In the former case, the Candidate next in order of merit and in other respects duly qualified, shall be deemed to be a selected Candidate. A selected Candidate declining to accept the appointment which may be offered to him will be disqualified for any subsequent competition.

9. Selected Candidates before proceeding to India, will be on probation for two years, during which time they will be examined periodically, with a view of testing their progress, in the following subjects :—†

	Marks.
1. Law	1,250
2. Classical Languages of India—	
Sanskrit	500
Arabic	400
Persian	400
3. Vernacular Languages of India (each)	400
4. The History and Geography of India	350
5. Political Economy	350

In these Examinations, as in the open competition, the merit of the Candidates examined will be estimated by marks, and the number set opposite to each subject denotes the greatest number of marks that can be obtained in respect of it at any one Examination. The Examination will be conducted by means of printed questions and written answers, and by *viva voce* Examination, as may be deemed necessary. The last of these Examinations will be held at the close of the second year of probation, and will be called the "Final Examination," at which it will be decided whether a selected Candidate is qualified for the Civil Service of India. At this Examination Candidates will be permitted to take up any one of the following branches of Natural Science, viz.—Botany, Geology, and Zoology, for which 350 marks will be allowed.

10. Any Candidate who, at any of the periodical Examinations, shall appear to have wilfully neglected his studies, or to be physically incapacitated for pursuing the prescribed course of training, will be liable to have his name removed from the list of selected Candidates.

11. The selected Candidates who, at the Final Examination, shall be found to have a competent knowledge of the subjects specified in Regulation 9, and who shall have satisfied the Civil Service Commissioners of their eligibility in respect of age, health, and character,

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* Thirteen. *See* note * on page 3.

† Full instructions as to the course of study to be pursued will be issued to the successful Candidates as soon as possible after the result of the open competition is declared.

shall be certified by the said Commissioners to be entitled to be appointed to the Civil Service of India, provided they shall comply with the regulations in force at the time for that Service.

12. Applications from persons desirous to be admitted as Candidates are to be addressed to the "Secretary to the Civil Service Commissioners, London, S.W.," from whom the proper form for the purpose may be obtained.

September, 1877.

The Civil Service Commissioners are authorised by the Secretary of State for India in Council to make the following announcements :—

(1.) *Selected Candidates will be permitted to choose,* according to the order in which they stand in the list resulting from the open competition as long as a choice remains, the Presidency (and in Bengal the Division of the Presidency) to which they shall be appointed, but this choice will be subject to a different arrangement should the Secretary of State or Government of India deem it necessary.*

(2.) *The Probationers, having passed the necessary Examinations, will be required to report themselves to their Government in India not later than the close of December*, 1881.

(3.) *The seniority in the Civil Service of India of the selected Candidates shall be determined according to the Order in which they stand on the list resulting from the Final Examination.*

(4.) *An allowance of* £150 *a year will be given during each of the two years of their probation to all Candidates who pass their probation at some University to be approved beforehand by the Secretary of State, provided such Candidates shall have passed the required Examinations to the satisfaction of the Civil Service Commissioners, and shall have complied with such rules as may be laid down for the guidance of selected Candidates.*

(5.) *All selected Candidates will be required, after having passed the second periodical Examination, to attend at the India Office for the purpose of entering into an agreement binding themselves, amongst other things, to refund in certain cases the amount of their allowance in the event of their failing to proceed to India. A surety will be required.*

(6.) *After passing the Final Examination, each Candidate will be required to attend again at the India Office, with the view of entering into covenants. The stamps payable on these documents amount to* £1.

(7.) *Candidates rejected at the Final Examination of* 1880 *will in no case be allowed to present themselves for re-examination.*

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* This choice must be exercised immediately after the result of the open competition is announced, on such day as may be fixed by the Civil Service Commissioners.

EXTRACT from ARRANGEMENTS for the OPEN COMPETITION of June and July 1878, for the CIVIL SERVICE of INDIA.

NOTICES.

On the first day of the Examination, Candidates will be required to state on a form which will be placed before them their addresses during the Examination, and they are requested thereafter to keep the Commissioners informed of all changes in their address until they have received the announcement of the result of the Examination.

The result of the Examination will be communicated by letter to each Candidate, probably early in August. The successful Candidates will be required to attend in London, *immediately after this announcement*, for the purpose of being medically examined, of exercising their choice of Presidency, and of receiving instructions as to the special studies to be pursued during their two years of probation.

Candidates will be required to leave their hats, overcoats, umbrellas, and any books or papers which they may have brought with them in the room provided for this purpose, before proceeding to the Examination Room.

The Examination on paper will in each case begin at the hour indicated in the following Time Table, but the door of the Examination Room will be kept open for half an hour afterwards, in order that Candidates may not suffer from accidental delays. Candidates arriving after the expiration of that half hour will not be admitted.

No Candidate will be allowed to quit the Examination Room on any day until the expiration of half an hour from the time fixed for the commencement of the Examination.

The number in the margin (and *not* the name of the Candidate) must be placed outside each book sent in to the Examiners.

No Candidate who has left the Examination Room during the hours assigned to paper work will be permitted to return to the paper which he has quitted.

Candidates wishing for explanation of the meaning of any of the questions before them may apply to the Examiners. With this exception, perfect silence is to be preserved in the Examination Room; and any Candidate guilty of disorderly or improper conduct will be liable to be excluded from the Examination.

Any Candidate detected in the use of a book or manuscript brought with him for his assistance, or in copying from the papers of any other Candidate, or in giving or receiving assistance of any description, will be regarded as disqualified, and his name will be removed from the List.

N.B.—At this Examination 13 Candidates will be selected, if so many shall be found duly qualified. Of these, 7 will be selected for the Presidency of Bengal (4 for the Upper Provinces, and 3 for the Lower Provinces), 3 for the Presidency of Bombay, and 3 for the Presidency of Madras.

CIVIL SERVICE COMMISSION,
CANNON ROW, LONDON, S.W.,
June 1878.

CIVIL SERVICE OF INDIA.

OPEN COMPETITION OF JUNE AND JULY 1878.

TIME TABLE of the EXAMINATION on PAPER to be held at the South Exhibition Galleries, South Kensington (entrance in Exhibition Road).

Day.	Hour.	Subject.
Tuesday, 25th June	10 A.M. to 1 P.M.	English Composition (1).
	2 P.M. to 5 P.M.	English Composition (2).
Wednesday, 26th June	10 A.M. to 1 P.M.	English History (1).
	2 P.M. to 5 P.M.	English History (2).
Thursday, 27th June	10 A.M. to 1 P.M.	English Literature (1).
	2 P.M. to 5 P.M.	English Literature (2).
Friday, 28th June	10 A.M. to 1 P.M.	Translation from Latin.
	2 P.M. to 5.30 P.M.	French.
Saturday, 29th June	10 A.M. to 1 P.M.	Translation into Latin.
	2 P.M. to 5 P.M.	Translation from Greek.
Monday, 1st July	10 A.M. to 1 P.M.	Translation into Greek.
Tuesday, 2nd July	10 A.M. to 1 P.M.	Arithmetic and Algebra. Sanskrit (1).
	2 P.M. to 5 P.M.	Geometry. Sanskrit (2).
Wednesday, 3rd July	10 A.M. to 1 P.M.	Pure Mathematics (1).
	2 P.M. to 5 P.M.	Pure Mathematics (2).
Thursday, 4th July	10 A.M. to 1 P.M.	Pure and Mixed Mathematics. (Easy Problems).
	2 P.M. to 5 P.M.	Statics and Dynamics.
Friday, 5th July	10 A.M. to 1 P.M.	Mixed Mathematics. (Higher).
	2 P.M. to 5 P.M.	Political Economy.
Saturday, 6th July	10 A.M. to 1 P.M.	Mechanical Philosophy.
	2 P.M. to 5.30 P.M.	German.
Monday, 8th July	10 A.M. to 1 P.M.	Electricity and Magnetism.
	2 P.M. to 5.30 P.M.	Italian.
Tuesday, 9th July	10 A.M. to 1 P.M.	Logic.
	2 P.M. to 5 P.M.	Heat and Light.
Wednesday, 10th July	10 A.M. to 1 P.M.	Chemistry.

*** There will be vivâ voce Examinations in all the subjects.

Examination Papers.

ENGLISH COMPOSITION. (1.)

J. R. Dasent, Esq.

Tuesday, 25th June 1878. 10 A.M. to 1 P.M.

Write an Essay on *one* of the following subjects:

1. Rightly to be great
Is not to stir without great argument
But greatly to find quarrel in a straw
When honour's at the stake.

2. Revenge is a kind of wild justice, which the more a man's nature turns to, the more ought law to weed it out.

3. Discretion in speech is more than eloquence.

N.B.—*Candidates are desired to bear in mind that their exercises will be valued according to the quality rather than the quantity of what they write.*

ENGLISH COMPOSITION. (2.)

J. G. Fitch, Esq.

Tuesday, 25th June 1878. 2 P.M. to 5 P.M.

1. Write a dialogue, giving both sides of the argument in relation to *one* of these topics:—
   (*a.*) The choice of a profession, civil or military.
   (*b.*) The good or evil of novel-reading.

2. Construct sentences exemplifying the right use of the following words:—

Diction.	Sensuous.	Terminology.	Technical.
Romantic.	Rhythmic.	Homogeneous.	Induction.
Individual.	Awful.	Ideal.	Allude.

3. Explain and illustrate the different significations of the words in the following groups:—
   (*a.*) Proud, conceited, presumptuous, insolent, haughty, vain.
   (*b.*) Strong, vehement, powerful, vigorous, able, potent, forcible.

4. Paraphrase *one* of the following passages; and comment on its language or meaning:—

(*a.*) The stateliness of houses, the goodliness of trees when we behold them, delighteth the eye; but that foundation which beareth up the one, that root which ministereth unto the other nourishment and life, is in the bosom of the earth concealed: and if there be at any time occasion to search into it, such labour is then more necessary than pleasant, both to them which undertake it and for the lookers on. In like manner the use and benefit of good laws, all that live under them may enjoy with delight and comfort, albeit the grounds and first original causes from whence they have sprung be unknown, as to the greatest part of men they are.

HOOKER.

(*b.*) Nuns fret not at their convent's narrow room;
And hermits are contented with their cells;
And students with their pensive citadels;
Maids at the wheel, the weaver at his loom
Sit blithe and happy; bees that soar for bloom
High as the highest peak of Furness-fells
Will murmur by the hour in foxglove bells:
In truth, the prison unto which we doom
Ourselves, no prison is; and hence to me
In sundry moods, 'twas pastime to be bound
Within the sonnet's scanty plot of ground;
Pleas'd if some souls (for such there needs must be)
Who have felt the weight of too much liberty,
Should find brief solace there, as I have found.

WORDSWORTH.

ENGLISH HISTORY. (1.)

GENERAL PAPER.

T. ARNOLD, Esq.

Wednesday, 26th June 1878. 10 A.M. to 1 P.M.

1. Give some account of the reigns of Ethelbert, Oswald, and Ini or Ina.

2. How did the legislative and judicial improvements made in the reign of Henry II. tend to hasten the process by which the different elements of the population were being welded into one English people?

3. What were the Provisions of Oxford? What important constitutional change was introduced soon after the Battle of Lewes?

4. Describe the Statutes of Labourers passed in the fourteenth century. To what disturbances did they lead, and how were those disturbances dealt with by the government?

5. Narrate briefly the series of events by which, in the fifteenth century, Normandy was for a time re-annexed, but finally lost, to the English crown.

6. What train of circumstances prepared the way for the fall of Wolsey? Describe the important ecclesiastical changes effected in the six years which followed that event.

7. Give short characters of Harley, Bolingbroke, Sir Robert Walpole, and Charles James Fox.

8. What was the object of the Exclusion Bill, and what reception did it meet with in Parliament?

9. Describe the public career of William Pitt, Earl of Chatham.

10. What were the circumstances which led to the battle of Navarino? Give a brief account of the battle? By what important consequences was it followed?

11. Give some account of Danegelt. Magna Charta. The Bill of Rights. The Cabal Ministry. Cato Street Conspiracy. The Luddite Riots.

ENGLISH HISTORY. (2.)

Rev. J. F. BRIGHT.

Wednesday, 26th June 1878. 2 P.M to 5 P.M.

[*Candidates are requested to write at the head of their paper the period in which they have already expressed their wish to be examined. Not more than eight questions are to be attempted, and those only within the limits of the stated period; no marks will be given to any others.*]

PERIOD (1.)

1. Trace the gradual growth of English cities from the successive charters of London and Lincoln.

2. Illustrate from the charters the character of the forest laws, and the changes which took place in them before the reign of Edward I.

3. Illustrate from the Great Charter the character and abuses of the government of the Plantagenets.

4. Describe in detail, and explain, the part taken by Edward I. in the baronial disturbances of his father's reign.

5. Show by an examination of some of his chief Statutes how Edward I. may be said to have completed the constitutional work of Henry II.

6. Characterise the great statesmen who successively directed the Government of England during the reign of Henry III.

7. What marked social changes took place in England in the 14th century?

8. Compare Edward III. and Henry V. as statesmen and as generals.

THE TUDOR PERIOD. (2.)

9. What were the chief measures by which Henry VII. completed the establishment of the practical dictatorship of the Tudors?

10. Trace the steps by which the position of the King as Head of the Church was established.

11. What various sources of discontent combined to cause the Pilgrimage of Grace? Examine the King's conduct with regard to its suppression.

12. What were the circumstances of Scotland at the time of its invasion by Somerset, what was the end he proposed to himself, and what the effect of his expedition?

13. Illustrate from the history of Elizabeth's marriage negotiations the truth of her assertion, that she was wedded to her people.

14. Discuss the proofs of Mary Stewart's complicity in her husband's murder.

15. What signs of the independence of the Commons are visible in Elizabeth's reign, and for what privileges did they contest?

16. What was the condition of Roman Catholics in the latter part of Elizabeth's reign? Examine the validity of the excuse usually alleged for the religious severity of her reign.

THE STEWART PERIOD. (3.)

17. Give the chief constitutional rights asserted in the Declaration of Right, and trace through the Stewart period the infringement of those rights with regard, 1st, to the army, 2nd, to the dispensing power.

18. Give an accurate account of Strafford's government in Ireland.

19. Give, with explanatory notes, the various forms of taxation employed, as it was thought illegally, by the two first Stewarts.

20. Give in their order, distinctly marking their differences, the attempts at Parliamentary government under Cromwell.

21. Give a succinct account of the relations between Charles II. and the French Court.

22. Give an accurate account of Monmouth's rebellion in both its English and Scotch branches.

23. Give a short account of the younger Cecil, Sir John Eliot, Sunderland, and Schomberg.

24. Describe with geographical accuracy the campaign of Oudenarde.

25. Explain, with historical comments, the Habeas Corpus Act, the Irish Act of Settlement, the Treaty of Union, and the terms "Court of Star Chamber," "Cabinet," and "Responsibility of Ministers."

THE HANOVERIAN PERIOD. (4.)

26. What chance was there at the end of Anne's reign of a return of the Stewarts?

27. Compare the principles of the Whig Party in 1720 with those of the Party bearing the same name in 1830.

28. Trace accurately the circumstances which led to the revolt of the American Colonies. Explain the attitude of English parties in relation to the war which followed.

29. With what declared objects did the Rockingham Ministry accept office in 1782, and how far did it carry them out?

30. Show from his measures the liberal tendencies of the younger Pitt before the outbreak of the French Revolution.

31. How far was England compelled (1) by positive treaty engagements, (2) by her interests, to engage in the French war in 1793?

32. Explain the rise of the United Irishmen.

33. Describe the Peerage Bill, the Excise Bill, the Septennial Act, Pitt's India Bill, the Canada Bill, and the Six Acts of 1819.

34. Describe the advance of Sir John Moore before the Retreat to Corunna. How far is it defensible?

35. Describe the position of the French forces at the return of Napoleon from Egypt, and contrast it with their position after the Peace of Lunéville.

36. Illustrate from the campaign of Waterloo both the strong and weak points of Napoleon's strategy and tactics.

ENGLISH LITERATURE. (1.)

GENERAL PAPER.

C. KNIGHT WATSON, Esq., M.A., F.S.A.

Thursday, 27th June 1878. 10 A.M. to 1 P.M.

1. Of what elements is the English language composed?

2. Divide the English language *ante* 1550 into periods. Mention the most important literary productions which belong to each of such periods.

3. What were the three great English Dialects in the middle of the fourteenth century? Define the areas in which they respectively prevailed. Which of them ultimately developed into the Standard English?

4. State what you know of the life of Chaucer. What was the title of his principal poem, and who were the personages introduced? By whom have portions of it been put in a modern dress?

5. Supposing you had to compile a "Reader," or Delectus of English Literature, Prose and Verse, from Chaucer to Elizabeth (inclusive), what authors would you have available, and what pieces would you select?

6. Compare the progress of English Prose with that of English Poetry. Who did for Prose what Chaucer did for Poetry? Give as full an account as you can (with dates) of the works of *three* of the following authors: *Sir Philip Sydney. Hooker. Chillingworth. Clarendon. Sir W. Temple. Barrow. Burke. Robertson. Hallam. Hobbes. Bolingbroke.*

7. Name the *principal* works of Dr. Johnson, Pope, and Goldsmith, as far as you can in chronological order. Give dates and a *brief* indication of the subject of each.

8. Who were the authors, and what were the subjects, of the following works? *The Castle of Indolence. Ode to Duty. Cooper's Hill. Cymbeline. Every Man in his Humour. Shepheardes Kalendar. The Alchemist. Histriomastix. Drapier's Letters. Cato. The Complete Angler. The Temple. On the rule and exercise of Holy Living. The Shipwreck. Sense and Sensibility. John Gilpin. The Confessio Amantis. Thalaba. The Pleasures of Hope. The Pleasures of Memory. Peveril of the Peak.*

9. Compare Scott, as a novel-writer, with Dickens or Thackeray.

10. State what you know of any *three* of the following poems; and quote or refer to passages in illustration of your remarks.
    1. On receiving my Mother's Picture.
    2. The Cottar's Saturday Night.
    3. The Mariners of England.
    4. Intimations of Immortality.
    5. The Bard.
    6. The Bridge of Sighs.
    7. The Deserted Village.
    8. Christabel.
    9. Ode to a Skylark.

11. Where do the following passages occur? Explain them with reference to the context in each case.
    (1.) In maiden meditation fancy-free.
    (2.) Where more is meant than meets the ear.
    (3.) The light that never was on sea or land.
    (4.) I own the soft impeachment.
    (5.) O for a lodge in some vast wilderness,
    Some boundless contiguity of shade.
    (6.) Ill fares the land, to hopeless ills a prey,
    Where wealth accumulates and men decay.
    (7.) The soul's calm sunshine and the heartfelt joy.
    (8.) Fears of the brave and follies of the wise.

(9.) Ay! every inch a king.

(10.) License they mean where they cry liberty.

(11.) Dear as remembered kisses after death.

(12.) What's in a name? That which we call a rose,
By any other name would smell as sweet.

(13.) Better fifty years of Europe than a cycle of Cathay.

(14.) The starry Galileo and his woes.

(15.) The people's prayer, the glad diviner's theme,
The young men's vision, and the old men's dream.

(16.) Not to know me argues yourself unknown.

ENGLISH LITERATURE. (2.)

C. KNIGHT WATSON, Esq., M.A., F.S.A.

Thursday, 27th June 1878. 2 P.M. to 5 P.M.

[N.B.—You are expected to answer not more than *Eight* of the following Questions, confining yourself to those which relate to the works which you have specially studied. Credit will be given for any knowledge you may show, in proportion as it appears to be derived *at first hand from your own reading of the works.*]

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1. Point out the confusion which exists as to the currently received titles and authorship of the "*Vision*," "*Crede*," and "*Tale*," respectively, which are grouped around the name of "*Piers Plowman*." State the real facts of the case. Sketch the literary history of the "*Vision*," and collect the internal evidence of its date.

2. Give your estimate of Chaucer's position in English Literature as gathered from and illustrated by your perusal of the *Prologue* and *Knight's Tale*. Point out, in particular, his dramatic power, *by specific references to such of Chaucer's works as you have yourself read.*

3. Explain, with reference to the context, each of the following passages from Chaucer's *Prologue* and *Canterbury Tales*, commenting on any allusions, and any peculiar words, forms, or phrases.

   (1.) But soth is seyd, goon sithen many yeres,
   That feld hath eyen, and the woode hath eeres;
   It is ful fair a man to bere him evene
   For al day meteth men at unset stevene.

   (2.) It is right fair to ben yclept *Madame*,
   And gon to vigilies al byfore
   And han a mantel riallyche i-bore.

   (3.) And also war him of a *significavit*.

   (4.) I have wel rad in daun Burnel the Asse, &c.

(5.) And in his geere, for al the world he ferde
Nought oonly lyke the lovers maladye
Of Hereos, but rather lik manye
Engendred of humour melancholik
Byforen in his selle fantastyk.

(6.) Phebus hath lefte the angle meridional
And yet ascending was the beste roial
The gentle leon, with his Aldiran.

(7.) And for to maken other be war by me
As by the whelp chasted is the leoun.

(8.) She shewed wel, for no worldly unreste
A wyf as of hir-self no thing ne sholde
Wille in effect, but as hir housbond wolde.

4. What instructions should be given to a modern reader to enable him to read Chaucer aloud without marring the metre or the rhythm? State in particular the rules as to the final — *e*.

5. What is the meaning of each of these words? *Vernicle. Launde. Maunciple. Wake-pleyes. Sawceflem. Alaunitz. Yeddynges. Heronsewes. Prospectyves. To-race. Undern. Pricasour. Love-days. Golyardeys. Sompnour. Wastel-bread.*

6. What was there in the circumstances of the age which may have given a direction and an impulse to the genius of Spenser? Explain the peculiar meaning of the epithet "*moral*" applied to him by Drayton, "*sage and serious,*" by Milton. Discuss the statement that the Faerie Queen is "the source of all our modern poetry."

7. Give the argument of the First Book of the "Faerie Quêen." What account does Spenser himself furnish of his object in writing the Poem? Give examples from this First Book (1) of Spenser's use of Similes, (2) of his imitations of Chaucer, (3) of archaic words, constructions, and inflexions. To what extent was this archaicism affected and artificial?

8. Explain and comment on the following passages, stating in each case the context:

(1.) And He that harrowed hell with heavie stowre.

(2.) As commonly as friend does with his friend.

(3.) Therewith they gan to hurtlen greedily
Redoubled battaile ready to darrayne.

(4.) If old Aveugles sons so evill heare.

(5.) It rightly hot
The well of life, ne yet his virtues had forgot.

(6.) Faire feeling words he wisely gan display
And for her humor fitting purpose faine
To tempt the cause itselfe for to bewray.

(7.) Suffised fates to former kynd
Shall us restore.

(8.) His wearie pounces all in vaine doth spend
To trusse the pray too heavy for his flight.

(9.) This said, adowne he looked to the ground
To have returned, but dazed were his eyne.

9. State what is known of Shakspeare's Life. Divide his career into Periods, and his Plays into Groups, and explain in each case on what principle you proceed. Give a brief account of the *literary* history of his works, the early editions, &c., &c.

10. What period of time and what reigns are included in Shakspeare's Historical Plays collectively, and by each of them singly? To what sources was he indebted for the history? Mention any case in which his representations are not confirmed by more accurate authorities, or in which he has designedly departed from the authorities he had before him.

11. What contemporaneous events are supposed to be referred to in Shakspeare's *Tempest*? How has the following passage in Ben Jonson been held to indicate a different—and what—date?

> All our English writers
> I mean such as are happy in the Italian
> Will deign to steal out of this author, mainly,
> Almost as much as from Montaignié.

12. From what sources did Shakspeare derive *As you Like it*? What does the name of this play mean? What internal evidence does it yield as to its date? Discuss the character of Jaques, using as much as possible Shakspeare's own words in illustration of your meaning. Did Orlando detect Rosalind's disguise? Annotate the following passages:

(1.) According to the fool's bolt, sir, and such dulcet diseases.
(2.) An inland man.
(3.) But at fourscore it is too late a week.
(4.) 'Tis a Greek invocation to call fools into a circle.
(5.) And then he drew a dial from his poke.
(6.) That which here stands up
Is but a quintaine.
(7.) One inch of delay more is a South Sea of discovery.
(8.) Not so, but I answer you right painted cloth from whence you have studied your questions.
(9.) You'll be whipped for taxation one of these days.

13. Criticise any *three* of the following plays of Shakspeare, with special reference to one or more of the following points:—(1) Analysis of the principal characters, illustrated by quotations. (2) Beauty of particular passages. (3) Source of the plot and skilful adaptation of the story to the drama. (4) Purposes served by the subordinate characters. (5) Use of the Supernatural. The plays referred to are as follows:—*Hamlet. Macbeth. Julius Cæsar. King Lear. Midsummer Night's Dream. Merchant of Venice. Richard II.*

14. Through what changes did Bacon's *Essays* pass before they reached their present shape? How far have they been thought to throw light upon his character? Give a careful analysis (as far as possible in the author's own words) of *one* of the Essays. What is the history of the Latin version?

15. Annotate the following passages, explaining whatever is obscure in diction or allusion, &c.:

(1.) There is a toy which I have heard, and I would not have it given over but waited upon a little.

(2.) The turning of the cat in the pan.

(3.) Either men will not take pawns without use, or, if they do, will look closely to the forfeiture.

(4.) Upon the matter, in a great wit deformity is an advantage.

(5.) All bravery stands upon comparisons.

(6.) Machiavel knew not of a friar Clement, nor a Ravaillac, nor Jaureguy, nor a Balthasar Gerard.

(7.) So it be with demonstration that a man doth it upon regard.

(8.) A prudent king such as is able to grind with a handmill.

(9.) For their men of war, it is a dangerous state where they live and remain in a body and are used to donatives.

16. State what you know of the history of *Paradise Lost* (1) from Milton's own account, (2) from other sources. What other Epic had he intended to write? In what form was it originally cast? Discuss the charges of plagiarism which have been brought against the author. What opinions have been expressed on the merits and defects of *Paradise Lost*?

17. Paraphrase the following passages in simple prose.

(1.) All these and more came flocking; but with looks
Downcast and damp, yet such wherein appeared
Obscure some glimpse of joy to have found their chief
Not in despair, to have found themselves not lost
In loss itself: which on his countenance cast
Like doubtful hue.

(2.) Alone and without guide, half lost, I seek
What readiest path leads where your gloomy bounds
Confine with heaven: or if some other place,
From your dominion won, th'ethereal King
Possesses lately, thither to arrive,
I travel this profound, direct my course:
Directed, no mean recompense it brings
To your behoof, if I that region lost,
All usurpation thence expelled, reduce
To her original darkness and your sway,
Which is my present journey, and once more
Erect the standard there of antient Night;
Yours be th'advantage, all mine the revenge.

(3.) What matter where if I still be the same
And what I should be, all but less than he
Whom thunder hath made greater.

(4.) What though the field be lost?
All is not lost; the unconquerable will
And study of revenge, immortal hate,
And courage never to submit or yield,
And what is else not to be overcome,
That glory never shall his wrath or might
Extort from me.

18. Give an analysis of *L'Allegro* or of *Il Penseroso*. What trace do they exhibit of *local* details? In what metre are they written? Explain the following phrases. (1.) *The Attic boy.* (2.) *Civil suited Morn.* (3.) *Debonair.* (4.) *Dight.* (5.) *Cynosure.* (6.) *Rebecks.* (7.) *Sable stole of cypress lawn.*

19. Give some account of *Masques* in general, and of *Comus* in particular.

Give the substance of Johnson's criticism on *Comus*. How and why is the story of Sabrina introduced? Explain the allusions, or whatever is otherwise obscure in the following passages:

(1.) He that has light within his own clear breast
May sit i' the centre and enjoy bright day.

(2.) And the Carpathian wizard's hook.

(3.) Not that Nepenthes which the wife of Thone
In Egypt gave to Jove-born Helena.

(4.) By dead Parthenope's dear tomb.

(5.) Higher than the sphery chime.

20. Specify to which of Milton's Poems, respectively, Macaulay refers in the following passage: "A victory, an unexpected attack upon "a city, a momentary fit of depression or exultation, a jest thrown "out against one of his books, a dream which for a short time "restored to him that beautiful face over which the grave had "closed for ever, led him to musings which without effort shaped "themselves into verse."

21. Give the argument and estimate the merits of *Samson Agonistes*. What does *Agonistes* mean? What may have induced Milton to choose Samson as the subject of a poem? Annotate all the following passages. Paraphrase the last, and of that last punctuate the two last lines.

(1.) Appoint not heavenly disposition, Father.

(2.) . Silent as the moon
When she deserts the night
Hid in her vacant interlunar cave.

(3.) Then put on all thy gorgeous arms, thy helmet
And brigandine of brass, the broad habergeon
Vantbrace and greaves and gauntlet.

(4.) But he though blind of sight,
Despised, and thought extinguished quite,
With inward eyes illuminated,
His fiery virtue roused
From under ashes into sudden flame,
And as an evening dragon came,
Assailant on the perched roosts
And nests in order ranged
Of tame villatic fowl, but as an eagle
His cloudless thunder bolted on their heads.
So virtue given for lost,
Depressed and overthrown, as seemed,
Life that self-begotten bird
In the Arabian woods embost,
That no second knows nor third,
And lay erewhile a holocaust
From out her ashy womb now teemed,
Revives, reflourishes, then vigorous most
When most inactive deemed;
And though her body die her fame survives
A secular bird ages of lives.

22. What were the circumstances which gave rise to Milton's *Areopagitica*? What use does he make of the story of Iris, and of old Proteus, and of Spenser's "Sir Guion," and of the building of a Temple? What does he mean by the following expressions? "*Broad Verses.*" "*A linen decency.*" "*Muing her mighty youth.*" "*The Castle St. Angelo of an Imprimatur.*" "*England hears ill abroad.*" "*A dividual movable.*"

23. What was the state of parties in England when *Absalom and Achitophel* was written? Give a key to the *Dramatis Personæ* of Part I and of as much of Part II as Dryden himself wrote. What explanations have been offered of the additions made in the second issue of Part I? In what years were the two Parts respectively published? Quote the opening lines of some of the more famous passages.

24. What were the events in the "Year of Wonders" which induced Dryden to commemorate them in verse? What does he himself say of the verse in which he commemorates them? Quote some of the stanzas which have been most admired, and some which have been most decried.

25. In the *Hind and the Panther*, who are respectively the Hare, the Fox, the Bear, the Boar, the Hind, the Panther, and the Lion? Explain the allusions in the following passages:

(1.) What though your native kennel still be small
Bounded betwixt a puddle and a wall.

(2.) But when Curtana will not do the deed.

(3.) Thus of three marks which in the creed we view
Not one of all can be applied to you;
Much less the fourth.

(4.) Such were the pleasing triumphs of the sky
For James his late nocturnal victory.

(How do you account for the form "*James his*" in this passage?)

(5.) It now remains for you to school your child
And ask why God's Anointed he reviled;
A king and princess dead! did Shimei worse?

(6.) Well satisfied to have the *but and peace.*

(7.) A Greek and bountiful forewarns us twice.

26. Give Johnson's estimate of the relative merits of Dryden and Pope. What changes were introduced in the second and subsequent editions of the Rape of the Lock? Complete the context of the following lines, and explain the allusions:

(1.) When next he looks through Galileo's eyes.

(2.) Spadillio first, unconquerable lord!

(3.) She dearly pays for Nisus' injured hair.

(4.) Once on a time La Mancha's knight they say, &c.

(5.) Reason's whole pleasure, all the joys of sense
Lie in three words.

(6.) But Appius reddens at each word you speak.

(7.) The glory of the priesthood and the shame.

(8.) Say was it virtue, more though Heaven ne'er gave
Lamented Digby! sunk thee to the grave?

(9.) Build on the wave or arch beneath the sand.

(10.) And played the god an Engine on his foe.
(11.) How happy those to ruin, these betray.

27. Give a brief account of the works or passages referred to under any *six* of the following headings: illustrating your remarks by quotations from, or specific references to the most striking portions of those which you select.

Vision of Mirza. Sir Roger de Coverley's behaviour at the Assizes. Addison's remarks on Wit. Cato's Soliloquy. The Judges and Courts of Lilliput. Venice in Childe Harold. Arthur's Adieu to Guinevere. The child and the shell in the Excursion. Cowper's praise and censure of London. Tintern Abbey, or King's College Chapel. Macaulay on Bunyan's treatment of Allegory. Henry the Fifth's Soliloquy on the burdens of Royalty. The Advice of Polonius to Laertes. Cowley's Essay on "Myself". Macaulay's Comparison of Addison with Swift and Voltaire. His account of the result of the Baconian philosophy. Burke's remarks on England as the Home of Freedom. Byron's dying Gladiator. Henry the Fourth's Apostrophe to Sleep. Shelley's to Sleep and Death.

TRANSLATION FROM GREEK.

REV. C. EVANS.

Saturday, 29th June 1878. 2 P.M. to 5 P.M.

Translate into English:

Ὀσσάκι δ' ὁρμήσειε ποδάρκης δῖος Ἀχιλλεὺς
Στῆναι ἐναντίβιον, καὶ γνώμεναι, εἴ μιν ἄπαντες
Ἀθάνατοι φοβέουσι, τοὶ οὐρανὸν εὐρὺν ἔχουσιν,
Τοσσάκι μιν μέγα κῦμα Διϊπετέος ποταμοῖο
Πλάζ' ὤμους καθύπερθεν· ὁ δ' ὑψόσε ποσσὶν ἐπήδα,
Θυμῷ ἀνιάζων· ποταμὸς δ' ὑπὸ γούνατ' ἐδάμνα
Λάβρος, ὕπαιθα ῥέων, κονίην δ' ὑπέρεπτε ποδοῖιν.
Πηλεΐδης δ' ὤμωξεν, ἰδὼν εἰς οὐρανὸν εὐρύν·
Ζεῦ πάτερ, ὡς οὔτις με θεῶν ἐλεεινὸν ὑπέστη
Ἐκ ποταμοῖο σαῶσαι· ἔπειτα δὲ καί τι πάθοιμι.
Ἄλλος δ' οὔτις μοι τόσον αἴτιος Οὐρανιώνων,
Ἀλλὰ φίλη μήτηρ, ἥ με ψεύδεσσιν ἔθελγεν·
Ἦ μ' ἔφατο Τρώων ὑπὸ τείχεϊ θωρηκτάων
Λαιψηροῖς ὀλέεσθαι Ἀπόλλωνος βελέεσσιν.
Ὤς μ' ὄφελ' Ἕκτωρ κτεῖναι, ὃς ἐνθάδε γ' ἔτραφ' ἄριστος.
Τῷ κ' ἀγαθὸς μὲν ἔπεφν', ἀγαθὸν δέ κεν ἐξενάριξεν.
Νῦν δέ με λευγαλέῳ θανάτῳ εἵμαρτο ἁλῶναι,
Ἐρχθέντ' ἐν μεγάλῳ ποταμῷ, ὡς παῖδα συφορβόν,
Ὅν ῥά τ' ἔναυλος ἀποέρσῃ χειμῶνι περῶντα.

HOMER.

ΠΡΕΣΒΥΣ.

Ὦ τέκνον, οὐδεὶς δυστυχοῦντι σοι φίλος.
Εὕρημα γὰρ τὸ χρῆμα γίγνεται τόδε,
Κοινῇ μετασχεῖν τἀγαθοῦ καὶ τοῦ κακοῦ.
Σὺ δ', ἐκ βάθρων γὰρ πᾶς ἀνήρησαι φίλοις
Οὐδ' ἐλλέλοιπας ἐλπίδ', ἴσθι μου κλύων,
Ἐν χειρὶ τῇ σῇ πάντ' ἔχεις καὶ τῇ τύχῃ
Πατρῷον οἶκον καὶ πόλιν λαβεῖν σέθεν.

ΟΡΕΣΤΗΣ.

Τί δῆτα δρῶντες τοῦδ' ἂν ἐξικοίμεθα;
ΠΡ. Κτανὼν Θυέστου παῖδα σήν τε μητέρα.
ΟΡ. Φρουραῖς κέκασται δεξιαῖς τε δορυφόρων;
ΠΡ. Ἔγνως· φοβεῖται γάρ σε κοὐχ εὕδει σαφῶς.
ΟΡ. Εἶεν· Σὺ δὴ τοὐνθένδε βούλευσον, γέρον.
ΠΡ. Κἀμοῦ γ' ἄκουσον· ἄρτι γάρ μ' εἰσῆλθέ τι.
ΟΡ. Ἐσθλόν τι μηνύσειας, αἰσθοίμην δ' ἐγώ.

EURIPIDES.

Γνῶτε δὲ καὶ ἐς τὰς ἡμετέρας νῦν ξυμφορὰς ἀπιδόντες, οἵτινες ἀξίωμα μέγιστον τῶν Ἑλλήνων ἔχοντες ἥκομεν παρ' ὑμᾶς, πρότερον αὐτοὶ κυριώτεροι νομίζοντες εἶναι δοῦναι ἐφ' ἃ νῦν ἀφιγμένοι ὑμᾶς αἰτούμεθα. καίτοι οὔτε δυνάμεως ἐνδείᾳ ἐπάθομεν αὐτὸ οὔτε μείζονος προσγενομένης ὑβρίσαντες, ἀπὸ δὲ τῶν ἀεὶ ὑπαρχόντων γνώμῃ σφαλέντες, ἐν ᾧ πᾶσι τὸ αὐτὸ ὁμοίως ὑπάρχει· ὥστε οὐκ εἰκὸς ὑμᾶς διὰ τὴν παροῦσαν νῦν ῥώμην πόλεώς τε καὶ τῶν προσγεγενημένων καὶ τὸ τῆς τύχης οἴεσθαι ἀεὶ μεθ' ὑμῶν ἕσεσθαι· σωφρόνων δὲ ἀνδρῶν οἵτινες τἀγαθὰ ἐς ἀμφίβολον ἀσφαλῶς ἔθεντο· καὶ ταῖς ξυμφοραῖς οἱ αὐτοὶ εὐξυνετώτερον ἂν προσφέροιντο· γόν τε πόλεμον νομίσωσι μὴ καθ' ὅσον ἄν τις αὐτοῦ μέρος βούληται μεταχειρίζειν, τούτῳ ξυνεῖναι, ἀλλ' ὡς ἂν αἱ τύχαι αὐτῶν ἡγήσωνται. καὶ ἐλάχιστ' ἂν οἱ τοιοῦτοι πταίοντες, διὰ τὸ μὴ τῷ ὀρθουμένῳ αὐτοῦ πιστεύοντες ἐπαίρεσθαι, ἐν τῷ εὐτυχεῖν ἂν μάλιστα καταλύοιντο. ὃ νῦν ὑμῖν, ὦ Ἀθηναῖοι, καλῶς ἔχει πρὸς ἡμᾶς πρᾶξαι, καὶ μήποτε ὕστερον, ἢν ἄρα μὴ πειθόμενοι σφαλῆτε, ἃ πολλὰ ἐνδέχεται, νομισθῆναι τύχῃ καὶ τὰ νῦν προχωρήσαντα κρατῆσαι, ἐξὸν ἀκίνδυνον δόκησιν ἰσχύος καὶ ξυνέσεως ἐς τὸ ἔπειτα καταλιπεῖν.

THUCYDIDES.

Νομίζω τοίνυν ὑμᾶς, ὦ ἄνδρες Ἀθηναῖοι, οὐ καθ' ἕν τι μόνον τοὺς προγόνους μιμουμένους ὀρθῶς ἂν ποιεῖν, ἀλλὰ καὶ κατὰ πάντα, ὅσα ἔπραττον ἐφεξῆς. ἐκεῖνοι τοίνυν, ὡς ἅπαντες, εὖ οἶδ' ὅτι, τὸν λόγον τοῦτον ἀκηκόατε, Καλλίαν τὸν Ἱππονίκου, ταύτην τὴν ὑπὸ πάντων θρυλουμένην εἰρήνην πρεσβεύσαντα, ἵππου μὲν δρόμον ἡμέρας πεζῇ μὴ καταβαίνειν ἐπὶ τὴν θάλατταν βασιλέα, ἐντὸς δὲ Χελιδονείων καὶ Κυανέων πλοίῳ μακρῷ μὴ πλεῖν, ὅτι δῶρα λαβεῖν ἔδοξε πρεσβεύσας, μικροῦ μὲν ἀπέκτειναν, ἐν δὲ ταῖς εὐθύναις πεντήκοντα ἐπράξαντο τάλαντα. καίτοι καλλίω ταύτης εἰρήνην οὔτε πρότερον, οὔθ' ὕστερον, οὐδεὶς ἂν εἰπεῖν ἔχοι πεποιημένην τὴν πόλιν. ἀλλ' οὐ τοῦτ' ἐσκόπουν. τούτου μὲν γὰρ ἡγοῦντο τὴν αὐτῶν ἀρετήν, καὶ τὴν τῆς πόλεως δόξαν, αἰτίαν εἶναι, τοῦ δὲ προῖκα, ἢ μή, τὸν τρόπον τοῦ πρεσβευτοῦ· τοῦτον οὖν δίκαιον ἠξίουν παρέχεσθαι καὶ ἀδωροδόκητον, τὸν προσιόντα τοῖς κοινοῖς.

DEMOSTHENES.

TRANSLATION INTO GREEK.

Rev. Professor KENNEDY.

Monday, 1st July 1878. 10 A.M. to 1 P.M.

I.—*Translate into Greek Prose, with Accents:*

(1.) After the assembly was dismissed, the convicts were sent to prison. The embraces of their relatives and friends melted them to tears; and all were bewailing their fate, except Phocion. His countenance was the same as when the people sent him to command their armies; and beholders could not but admire his invincible firmness and magnanimity. Some of his enemies indeed reviled him as he went along; and one of them even spat in his face; upon which he turned to the magistrates, and said, "Will nobody correct this fellow's rudeness?" Thudippus, when he saw the executioner preparing the hemlock, began to complain of his hard fortune in having to die on Phocion's account. "How," said the old sage, "dost thou not esteem it an honour to die with Phocion?" One of his friends, asking him whether he had any commands to his son: "Yes," said he, "by all means tell him from me, to forget the ill-treatment I have had from the Athenians."

LANGHORNE.

Or,

(2.) Every thing being now decided, and the kingdom absolutely in the hands of the assembly, they have the power to make a new constitution, such as they think proper; and it will be a great spectacle for the world to view, in this enlightened age, the representatives of twenty-

five millions of people sitting on the construction of a new and better order and fabric of liberty than Europe has yet offered. It will now be seen whether they will copy the constitution of England freed from its faults, or attempt from theory to frame something absolutely speculative: in the former case, they will prove a blessing to their country; in the latter, they will probably involve it in inextricable confusions and civil wars, perhaps not in the present period, but certainly at some future one. I hear nothing of their removing from Versailles; if they stay there under the control of an armed mob, they must make a government that will please the mob; but they will, I suppose, be wise enough to move to some central town, Tours or Orleans, where their deliberations may be free. But the Parisian spirit of commotion spreads quickly; it is here; the troops that were near breaking my neck, are employed to keep an eye on the people who show signs of an intended revolt. They have broken the windows of some magistrates that are no favourites; and a great mob of them is at this moment assembled, demanding clamorously to have meat at 5*s.* a pound.

ARTHUR YOUNG.

II.—*Translate into Greek Tragic Iambics, with Accents:*

If the deed were ill,
Be you contented, wearing now the garland,
To have a son set your decrees at nought;
To pluck down justice from your awful bench;
To trip the course of law, and blunt the sword,
That guards the peace and safety of your person,
Nay, more, to spurn at your most royal image,
And mock your workings in a second body.
Question your royal thoughts, make the case yours,
Be now the father, and propose a son.
Hear your own dignity so much profaned,
See your own dreadful laws so loosely slighted;
Behold yourself so by a son disdained;
And then imagine me taking your part,
And, in your power, soft silencing your son.
After this cold consideration sentence me,
And, as you are a king, speak in your state,
What I have done that misbecame my place,
My person, or my liege's sovereignty.

SHAKSPEARE.

TRANSLATION FROM LATIN.

Very Rev. Dean MERIVALE.

Friday, 28th June 1878. 10 A.M. to 1 P.M.

[*Three only of the following passages are to be translated. Credit will be given for the* style *of the translation.*]

Translate into English:

Etsi me assiduo confectum cura dolore
Sevocat a doctis, Hortale, virginibus,
Nec potis est dulces Musarum expromere fetus
Mens animi: tantis fluctuat ipsa malis:

rum et Græcorum militaria præcepta legere cœperint; præposteri homines. Nam gerere, quam fieri, tempore posterius, re atque usu prius est. Comparate nunc, Quirites, me hominem novum cum illorum superbia. Quæ illi audire et legere solent, eorum partim vidi, alia egomet gessi: quæ illi literis, ea ego militando didici. Nunc vos existumate, facta an dicta pluris sint. Contemnunt novitatem meam, ego illorum ignaviam; mihi fortuna, illis probra objectantur. Quamquam ego naturam unam et communem omnium existumo, sed fortissumum quemque generosissumum esse. Ac si jam ex patribus Albini aut Bestiæ quæri posset, mene an illos ex se gigni maluerint, quid responsuros creditis, nisi, sese liberos quam optumos voluisse? Quodsi jure me despiciunt, faciant idem majoribus suis, quibus, uti mihi, ex virtute nobilitas cœpit. Invident honori meo; ergo invideant labori, innocentiæ, periculis etiam meis, quoniam per hæc illum cepi.

SALLUST.

Ego, tantis a me beneficiis in re publica positis, si nullum aliud mihi præmium ab senatu populoque Romano nisi honestum otium postularem, quis non concederet? sibi haberent honores, sibi imperia, sibi provincias, sibi triumphos, sibi alia præclaræ laudis insignia; mihi liceret ejus urbis, quam conservassem, conspectu tranquillo animo et quieto frui. Quid? si hoc non postulo; si ille labor meus pristinus, si sollicitudo, si officia, si operæ, si vigiliæ deserviunt amicis, præsto sunt omnibus; si neque amici in foro requirunt studium meum neque res publica in curia; si me non modo non rerum gestarum vacatio, sed neque honoris neque ætatis excusatio vindicat labore; si voluntas mea, si industria, si domus, si animus, si aures patent omnibus; si mihi ne ad ea quidem, quæ pro salute omnium gessi, recordanda et cogitanda quicquam relinquitur temporis, tamen hoc regnum appellabitur, cujus vicarius qui velit esse inveniri nemo potest? Longe abest a me regni suspicio; sin quæris qui sint Romæ regnum occupare conati, ut ne replices annalium memoriam, ex domesticis imaginibus invenies. Res enim gestæ, credo, meæ me nimis extulerunt ac mihi nescio quos spiritus attulerunt. Quibus de rebus tam claris, tam immortalibus, judices, hoc possum dicere, me, qui ex summis periculis eripuerim urbem hanc et vitam omnium civium, satis adeptum fore, si ex hoc tanto in omnis mortalis beneficio nullum in me periculum redundarit.

CICERO.

TRANSLATION INTO LATIN.

Rev. Professor KENNEDY.

Saturday, 29th June 1878. 10 A.M. to 1 P.M.

I.—*Translate into Latin Prose:—*

(1.) Pleasure and Pain were no sooner met in their new habitation, but they immediately agreed upon this point, that pleasure should take possession of the virtuous, and pain of the vicious part of that species, which was given up to them. But, upon examining to which of them any individual they met with belonged, they found each of them had a right to him; for, contrary to what they had seen in their old places of residence, there was no person so vicious who had not some good in him, nor any person so virtuous who had not in him some evil. The truth of it is, they generally found upon search that in the most vicious

Like unto a summer shade,
But now born, and now they fade.
Every thing doth pass away,
There is danger in delay:
Come, come, gather then the rose,
Gather it, or else you lose.
All the valley's swimming corn
To my house is yearly borne;
Every grape of every vine
Is gladly bruised to make me wine.
Only bend thy knee to me;
Thy wooing shall thy winning be.

GILES FLETCHER.

Or,

III. *Translate into any suitable Latin Metre, except Elegiac:*

Go find some whispering shade near Arne or Po,
And gently 'mong their violets throw
Your wearied limbs, and see if all those fair
Enchantments can charm grief or care.
Our sorrows still pursue us, and when you
The ruined Capitol shall view
And statues, a disordered heap, you can
Not cure yet the disease of man,
And banish your own thoughts. Go travel where
Another sun and stars appear
And land not touch'd by any covetous fleet,
And yet even there yourself you'll meet.
Stay here then, and while curious exiles find
New toys for a fantastic mind,
Enjoy at home what's real: here the spring
By her aerial quires doth sing
As sweetly to you as if you were laid
Under the learn'd Thessalian shade.
Direct your eyesight inward, and you'll find
A thousand regions in your mind
Yet undiscovered. Travel these, and be
Expert in home cosmography.
This you may do safe from both rock and shelf;
Man's a whole world within himself.

FRENCH.

MATTHEW ARNOLD, Esq. and M. ANTONIN ROCHE.

Friday, 28th June 1878. 2 P.M. to 5.30 P.M.
(Including the time occupied in Dictation.)

I. *Translate into English one of the two following passages, and parse the words in italics in the passage taken:*

Premièrement, elle est nourrie et élevée dans une grande épargne de bouche. C'est une fille accoutumée à vivre de salade, de lait, de fromage et de pommes; et à laquelle, par conséquent, il ne *faudra* ni table bien servie, ni consommés exquis, ni orges *mondés* perpétuels, ni les autres

délicatesses qu'il faudrait pour une autre femme ; et cela ne va pas à si peu de chose, qu'il ne monte bien, tous les ans, à trois mille francs pour le moins. Outre cela, elle n'est curieuse que d'une propreté fort simple, et n'aime point les superbes habits, ni les riches bijoux, ni les meubles somptueux, où donnent ses *pareilles* avec tant de chaleur ; et cet article-là *vaut* plus de quatre mille livres par an. De plus elle a une aversion horrible pour le jeu, ce qui n'est pas commun aux femmes d'aujourd'hui ; et j'en *sais* une de nos quartiers, qui a perdu, à trente et quarante, vingt mille francs cette année. N'en *prenons* rien que le quart. Cinq mille francs au jeu par an, quatre mille francs en habits et bijoux, cela fait neuf mille livres ; et mille écus que nous *mettons* pour la nourriture, ne *voilà*-t-il pas par année vos douze mille francs bien comptés ?

Or,

Le jour, je m'égarais sur de grandes bruyères terminées par des forêts. *Qu*'il fallait peu de choses à ma rêverie ! une feuille séchée que le vent chassait devant moi, une cabane dont la fumée s'élevait dans la cime dépouillée des arbres, la *mousse* qui tremblait au souffle du nord sur le tronc d'un chêne, une roche écartée, un étang *désert* où le jonc flétri murmurait ! Le clocher solitaire s'élevant au loin dans la vallée a souvent attiré mes regards ; souvent j'ai suivi des *yeux* les oiseaux de passage qui volaient au-dessus de ma tête. Je me figurais les bords ignorés, les climats lointains où ils se rendent ; j'aurais *voulu* être sur leurs ailes. Un secret instinct me tourmentait ; je sentais que je n'étais moi-même qu'un voyageur ; mais une voix du ciel semblait me dire : " Homme, la saison de ta migration n'est pas encore venue ; *attends* " que le vent de la mort se *lève*, alors tu déploieras ton vol vers ces " régions inconnues que ton cœur demande."

II. *Translate into English :*

Dans une Exposition, on s'attroupe volontiers devant les produits tapageurs, en passant à côté des spécimens modestes des grandes industries. La richesse de l'Angleterre repose sur un petit nombre de maîtresses branches de travail : la production du blé et du bétail, la filature, le tissage, et la confection des étoffes de coton et de laine, l'extraction de la houille, la production et le travail du fer et des autres produits minéraux ; le reste est secondaire. Mais il faut convenir que ces rudes et puissantes industries qui pourvoient aux grosses nécessités de la vie n'ont pas l'attrait des industries de luxe.

III. *Translate into English :*

Faire grand cas de quelqu'un. Se prendre à courir. Je ne lui en veux pas. A bout portant. J'en vins à bout. Mettre à même de payer. Être à même de payer. Être en mesure de payer. Menus propos. La méprise. Le mépris. Au petit jour. A petit jour. Jouer de bonheur.

IV. *Translate into French :*

The general counsels, and the plots and marshalling of affairs come best from those that are learned.

A poor relation is known by his knock.

His circumstances are better known than folks would take them to be.

With hushed breath and stealthy steps they ascended the winding stairs.

Nelson was not blind of one eye by birth.

So let it be with Cæsar.

You don't say so!

That is a matter of little weight.

Sit by me and read by the wax-candle.

V. *Translate into French* (beginning at line 6, "She was moved," &c.):

(The Earl of Essex, after his return from the fortunate expedition against Cadiz, observing the increase of the Queen's fond attachment towards him, took occasion to regret that the necessity of her service required him often to be absent from her person, and exposed him to all those ill offices which his enemies, more assiduous in their attendance, could employ against him.) She was moved with this tender jealousy; and making him the present of a ring, desired him to keep that pledge of her affection, and assured him that into whatever disgrace he should fall, whatever prejudices she might be induced to entertain against him, yet if he sent her that ring, she would immediately upon sight of it recall her former tenderness, would afford him a patient hearing, and would lend a favourable ear to his apology. Essex, notwithstanding all his misfortunes, reserved this precious gift to the last extremity; but after his trial and condemnation, he resolved to try the experiment, and he committed the ring to the Countess of Nottingham, whom he desired to deliver it to the Queen. The Countess was prevailed on by her husband, the mortal enemy of Essex, not to execute the commission; and Elizabeth, who still expected that her favourite would make this last appeal to her tenderness, and who ascribed the neglect of it to his invincible obstinacy, was, after much delay and many internal combats, pushed by resentment and policy to sign the warrant for his execution. The Countess of Nottingham falling into sickness, and affected with the near approach of death, was seized with remorse for her conduct; and having obtained a visit from the Queen, she craved her pardon, and revealed to her the fatal secret. The Queen, astonished with this incident, burst into a furious passion: she shook the dying Countess in her bed; and crying to her that God might pardon her, but she never could, she broke from her, and thenceforth resigned herself over to the deepest and most incurable melancholy.

HUME.

COMPOSITION.

VI. *Développer une de ces pensées:*

Il faut avoir de l'âme pour avoir du goût. (VAUVENARGUES).

Si l'on veut la paix, il faut se préparer à la guerre.

Le droit chemin est le plus court. (GUIZOT.)

FRENCH DICTATION.

La Patrie.—Que n'a-t-on pas dit et que ne peut-on dire encore sur l'amour de la patrie? La patrie, c'est le lieu qui fut le témoin des pures joies de notre enfance, des premiers sentiments de notre âme, des premières émotions de notre cœur. La patrie, c'est le pays où l'homme a reçu les premières leçons de religion et de morale, où il se réjouit de reposer auprès du tombeau de ses pères, après avoir vécu près du berceau de ses enfants. L'amour du sol natal est inné dans le cœur de l'homme, et on le regrette d'autant plus qu'on y a été plus malheureux. L'Ecossais, sous un ciel brillant, redemande ses brouillards et ses montagnes couvertes de neige. Un sauvage regrette plus sa hutte qu'un prince son palais. Quelles sont donc ces fortes attaches qui nous enchaînent au lieu natal? C'est peut-être le sourire d'une mère, d'une sœur; c'est peut-être le souvenir de ceux qui ont partagé nos joies d'enfance; ce sont peut-être les soins que nous avons reçus d'une nourrice; enfin, ce sont quelquefois les circonstances les plus simples, les plus triviales même: un chien qui aboyait la nuit dans la campagne; un rossignol qui revenait tous les ans dans le verger, le nid de l'hirondelle à la fenêtre, le clocher de l'église qu'on voyait au-dessus des arbres.

GERMAN.

Rev. J. J. Overbeck, D.D.

Saturday, 6th July 1878. 2 p.m. to 5.30 p.m.
(Including the time occupied in Dictation).

I.—*Translate into English:—*

Der Proceß der Grafen von Egmont und Hoorne wurde in aller Form von dem Rath der Zwölfe, den der Herzog zu Unterſuchungen über die vergangenen Unruhen in Brüſſel niedergeſetzt hatte, vorgenommen, und der Generalprokurator mußte die Anklage aufſetzen. Die, welche gegen Egmont gerichtet war, enthielt neunzig verſchiedene Klagepunkte, und ſechzig die andere, welche den Grafen von Hoorne anging. Jede noch ſo unſchuldige Handlung, jede Unterlaſſung wurde aus dem Geſichtspunkte betrachtet, den man gleich im Eingange feſtgeſetzt hatte, „daß beide Grafen, in Verbindung mit dem Prinzen von Oranien, getrachtet haben ſollten, das königliche Anſehen in den Niederlanden über den Haufen zu werfen, und ſich ſelbſt die Regierung des Landes in die Hände zu ſpielen."

Schiller.

Seit dem Jahre 1529 fing Kaiſer Karl der Fünfte an, von Land zu Land und immer dahin zu eilen, wo das Bedürfniß und die Lage der Geſchäfte ſeine Gegenwart erforderten. Wir ſehen ihn bald in Rom ſich bei den Cardinälen über die unverſöhnliche Feindſchaft Franz des Erſten beklagen, bald in Deutſchland dem Reichstage vorſitzen, um die religiöſe Entzweiung beizulegen, bald in den kaſtiliſchen Cortes bemüht, im Servicio ſtimmen zu laſſen. Dies ſind friedliche Bemühungen; öfter aber ſteht er an der Spitze ſeiner Heere. Er dringt über die Alpen in Frankreich vor und überſchwemmt die Provence; er ſetzt Paris von der Marne aus in Schrecken. Dann kehrt er um nach Oſten und Süden. Den Siegeslauf Soliman's hält er ein und ſucht den Halbmond bei Algier auf.

RANKE.

II.—*Translate into English the following Phrases:—*

1. Er kommt aus dem Regen in die Traufe.
2. Er iſt von Hauſe aus ein guter Mann und keineswegs ein beſchränkter Kopf, aber ſolch eine dumme Handlung hätte ich ihm doch nicht zugetraut.
3. Mit der Thüre ins Haus fallen.
4. Bei reiflicher Überlegung wird man einſehen, daß ſeine Gründe nicht ſtichhaltig ſind.

Grammatical Questions.

1. What conjunctions do not alter the construction?
2. When must you translate the English "*when*" by wann, when by wenn, and when by als?
3. What is the difference between wenn and ob; denn and dann; aber and ſondern?
4. Give a Verb governing two Accusatives, three Verbs governing the Genitive, and three Verbs governing the Dative.
5. When is the Feminine Substantive Nacht used as a Masculine one?
6. Give the different declensions of der as Article, as Demonstrative Pronoun, and as Relative Pronoun.

III.—*Translate into German:—*

Whilst you contemplate the dangers to which you are exposed, the sorrows and dishonour which accompany talents misapplied, and a course of indolence and folly, may you exert your utmost endeavours to avoid them! Seriously reflecting on the great end for which you were brought into existence; on the bright and encouraging examples of many excellent young persons; and on the mournful deviations of others who once were promising; may you be so wise as to choose and follow that path which leads to honour, usefulness, and true enjoyment! This is the morning of your life, in which pursuit is ardent, and obstacles readily give way to vigour and perseverance. Embrace this favourable season: devote yourselves to the acquisition of knowledge and virtue.

LINDLEY MURRAY.

IV.—*Translate into German the following phrases:—*

1. He was guided by interests always different from, sometimes contrary to, those of the community.
2. Honesty is the best policy.
3. I am at a loss what to do.
4. They will then see that to have faithfully performed their duty would have been their greatest consolation.

German Composition.

Write an Essay on one of the following themes:—

1. Ueber den materiellen Fortſchritt Indien's unter engliſcher Regierung.
2. Ueber die Unſittlichkeit des Haſardſpiels.

GERMAN DICTATION.

Wilberforce hatte ein großes Ziel im Auge, welches er bis an ſein Ende mit ungetheilter Aufmerkſamkeit, mit raſtloſem Eifer unter allen Schwierigkeiten, mit unermüdlicher Geduld bei dem Mißlingen wiederholter Verſuche bis zu dem letzten Siege verfolgte. Es war wieder gut zu machen, was chriſtliche Völker ſeit Jahrhunderten verſchuldet hatten. Schon im erſten Jahre ſeiner öffentlichen Laufbahn, im Jahre 1785, äußerte er die Hoffnung, daß ihn Gott als Werkzeug gebrauchen möge, um das Joch der armen Geſchöpfe, der Sklaven in Weſtindien, zu

zerbrechen oder doch zu erleichtern. Das Chriſtenthum lehrt ihn die Bedeutung der perſönlichen Freiheit für die Menſchenwürde, die es in Allen zu fördern ſucht, erkennen, das rechte Maß für jedes irdiſche Gut im Verhältniß zu dem Einen höchſten Gut finden.

NEANDER.

ITALIAN.

Professor PISTRUCCI.

Monday, 8th July 1878. 2 P.M. to 5.30 P.M.
(Including the time occupied in Dictation.)

I.—*Translate into English :—*

Oh dell' eterna idea luce coeva,
Onde si pasce e bea lo spirto umano,
Deh! tu la mente irraggiami e l'eleva
Ove giunger non può sguardo profano.
A te sol, nell' età che sì m'aggreva,
A te consacro il senno, a te la mano;
E qual vissi morrò: te sol prefissi
Norma alla vita mia: morrò qual vissi.

. . . . . .

O Verità, se per la tua bellezza
Quella sprezzai di lushinghiera sorte,
Parla pel labbro mio con tal franchezza,
Qual s' io fossi sul letto della morte:
Fa che quest' alma a celebrarti avvezza
Ti promulghi con voce assai più forte,
Ed, a destarlo dal sopor profondo,
Tua squilla sia sull' assonnato mondo!
Figlia di Dio, se tuo devoto io fui,
Deh! vibra un sol tuo raggio al mio pensiere,
Qual riflesso del Padre, in fronte a cui
Risplendi sì, ch' empi di te le sfere.
Sfavilla ne' miei versi al guardo altrui
Con quell' irresistibile potere
Ch' emanando da semplici parole
È folgore ai malvagi, ai buoni è sole!

(GABRIELE ROSSETTI).

Siccome poi l'amore alla poesia si andò svolgendo dentro di me coll' amore al mio paese, così ho pensato di far sempre servire, come meglio potevo la prima al secondo. M' accorgevo benissimo ch'egli era un impicciolire il campo della musa, uno strapparle molte penne dalle ali, un darle il fare, quasi direi, di vassalla; ma io sentivo l'orgoglio d'essere Italiano, presentivo che non sarei morto schiavo; e mi assunsi il canto come si assume un debito. Sennonchè, parecchie delle cose mie

essendo state scritte sotto l'occhio vigile, bieco, sospettoso dello straniero, con lo spettro del censore che mi ballava sempre sul tavolino, con la immagine dinanzi d'una prigione stiriana, ungherese, boema; molte idee le ho dovute strozzare in germe, molte gettar là a guisa d'indovinello; altre accennare con languido profilo senza potervi mettere le ombre che danno risalto, o il colore che le fa spiccar evidenti. I quali impacci fastidiosi certo non approdano all' arte che vuol esser libera ne' suoi andari, come l'anima. Di qui molte oscurità: di qui uno stile artifiziato, sconnesso, irresoluto, velato, senza quella linda semplicità, senza quella nervosa nudità, che son tanto care agli artisti, specialmente della razza greca e latina; di qui molta parte di quei difetti, che insieme agli altri, dovuti proprio alla mia insufficienza, balzeranno facilmente agli occhi del lettore. Schivo poi per indole di ogni servitù, ho sempre avuto in uggia anche la servitù letteraria. Quel poco che potevo essere, o male o bene, ho voluto essere io mi sono quindi guardato, più che mi fu possibile, dalla imitazione: ho ammirato coloro che andavano per la strada maestra, e mi sono messo per un sentierino: ho lasciato ai canefori delle feste antiche l'ufficio di raccogliere i fiori altrui per ispargerli sulla propria via.

A. Aleardi.

Translate into English the following phrases:—

Non vedono l'ora d' andarsene. Detto fatto ci si mise d' impegno. Siete proprio voi altri? Adesso tutto è in punto. È per troppo vero! Vista la mala parata si dette a fuggire. Dispongo del mio non del vostro. Io non vi teneva da tanto.

II. *Grammatical Questions.*

1. Give the Italian for *good, better, best; bad, worse, worst; high, higher, highest; low, lower, lowest.*
2. Exemplify by short sentences the comparatives of equality, superiority, and inferiority.
3. Which are the pronouns requiring the definite article? In what instances should it be omitted?
4. Write down the *whole* present tense indicative, and the *first person singular* of the future of: andare, venire, potere, volere, dovere, dolere.

III.—*Translate into Italian:—*

After a brief interval, the sovereigns requested of Columbus a recital of his adventures. His manner was sedate and dignified, but warmed by the glow of natural enthusiasm. He enumerated the several islands he had visited, expatiated on the temperate character of the climate, and the capacity of the soil for every variety of production, appealing to the samples imported by him as evidence of their natural productiveness. He dwelt more at large on the precious metals to be found in these islands, which he inferred less from the specimens actually obtained than from the uniform testimony of the natives to their abundance in the unexplored regions of the interior. Lastly, he pointed out the wide scope afforded to Christian zeal in the illumination of a race of men whose minds, far from being wedded to any system of idolatry, were prepared by their extreme simplicity for the reception of pure and uncorrupted doctrine. The last consideration touched Isabella's heart most sensibly; and the whole audience, kindled with various emotions by the speaker's eloquence, filled up the perspective with the gorgeous

colouring of their own fancies, as ambition, or avarice, or devotional feeling, predominated in their bosoms. When Columbus ceased, the King and Queen, together with all present, prostrated themselves on their knees in grateful thanksgivings, while the solemn strains of the Te Deum were poured forth by the choir of the royal chapel, as in commemoration of some glorious victory.

PRESCOTT.

Translate into Italian the following:

Over-confidence often leads to failure. It is now your turn to act. Things are taking a better turn. Such questions are not easily answered. It matters very little. He slowly drew away. It then vanished from our sight.

Subject for a short essay in Italian: "L'amor della Gloria."

ITALIAN DICTATION.

Marco, ciéco, fuori di sè dall' angoscia, dal furore, ... non respirando attro che sangue e morte, corse a Milano; e ingannato dal falso annunzio avuto nella casa di Lodrisio, si rivolse al palazzo del Vicario . . . . . e domandò ad alcuni famigliari di quell' abborrito ch' ei cercava. "È la dentro" gli rispose un d'essi, accennandogli un uscio, e nello stesso tempo corse in atto ossequioso ad aprirglielo. Marco, senza sospetto alcuno, si fa innanzi, passa la soglia, entra in un lungo stanzone; ed ecco appena vi ha posto il piede, l'uscio gli si richiude addosso di colpo, ... e in un batter d'occhio balzan fuori da varii nascondigli sei uomini armati, tutti coperti di maglia, col moriotto in capo e la visiera bassa, che lo assaliscono ad un tempo da ogni parte. Nel primo impeto gli fecer due ferite, una nella gola, una nel fianco: poi gli si strinsero addosso pigliandolo qual per le spalle, quale a traverso la persona, quale avviticchiandosegli alle gambe per farlo cadere. . . . . Marco si vide perduto, nè volle però morire senza contrasto; levò in alto un pugno, che nessuno potè tenergli, e lo calò con tanto forza sul capo d'uno che gli avea data in quel punto una stoccata nel petto, che il percosso stramazzó sul pavimento come un toro colpito dal maglio . . . . . .

T. GROSSI.

ARITHMETIC AND ALGEBRA.

W. D. NIVEN, Esq.

Tuesday, 2nd July 1878. 10 A.M. to 1 P.M.

1. A dealer buys a certain number of articles at the rate of 40 for a pound, and twice the same number at 50 for a pound. He sells at the rate of 48 for a pound. How much per cent. does he gain or lose by the transaction?

2. Show that the interest on £16,280 at $3\frac{1}{2}$ per cent. for 9 months is equal to the discount on £3,017. 7*s.* at 11 per cent. for 18 months.

3. The population of a town increases every year at the rate of 2 per cent. What was the number of inhabitants in 1874 if in 1877 it was 132,651.

4. Multiply the difference between $\cdot 3\dot{1}\dot{1}2$ and $\cdot 3\dot{1}1\dot{2}$ by $12\cdot 21$, and exhibit the result in the form of a repeating decimal.

5. The sum of £300 is invested in 3 per cent. stock at 96. What sum must be invested in 5 per cent. stock at 110 in order that the rate of interest on the whole investment may be $4\frac{1}{2}$ per cent.?

6. Simplify the expressions

(i.) $\dfrac{4x^4 - 5x^3 - x^2 + x + 1}{3x^4 - 4x^3 + 1}$.

(ii.) $\sqrt{7 + 4\sqrt{3}} + \sqrt{7 - 4\sqrt{3}}$.

7. Solve the equations:

(i.) $\dfrac{3x - 4}{x - 1} - \dfrac{x - 3}{x + 1} = \dfrac{2x + 21}{x + 3}$.

(ii.) $\sqrt{x + 4} + \sqrt{x - 4} = 4$.

(iii.) $ax + cy = b$, $2ac\,x^2 + c^2xy + a^2y^2 = b^2$.

8. Two trains start at the same time from two towns, and each proceeds at a uniform rate towards the other. The times occupied over the whole journey are t and t', and when the two trains pass one another one has run a miles more than the other. Find the distance between the towns, and the rates of the trains.

9. What are the conditions that $ax^3 + bx^2 + cx + d$ may be divisible by $px^2 + qx + r$ without remainder?

Show that

$$(x - 4)(x - 5)(x - 6)(x - 7) - 180(x - 2)(x - 3) + 120(x - 3)(x - 1) - 12(x - 1)(x - 2)$$

is divisible by

$$(x - 1)(x - 2)(x - 3),$$

and find the quotient.

10. Show how to insert any number of arithmetical means between two given quantities, and find the sum of the means so inserted.

Four numbers are in harmonical progression. The first, second, and fourth are in geometrical progression, and the sum of the numbers is 100. Find the numbers.

11. Find *a priori* the number of combinations of n things taken r at a time.

From a party of four gentlemen and five ladies in how many ways might couples be chosen to form a game of two, viz., a lady and a gentleman, on each side, and in how many of these combinations would the same couple be together?

12. The interest on a certain sum of money is £10, and the true discount on the same sum for the same time and rate is £9. What is the sum?

13. State the Binomial Theorem, and find the n^{th} term in the expansion of $(2ax + x^2)^{-3}$.

14. Investigate the expansion of $\log_e m - \log_e n$ in ascending powers of $\frac{m-n}{m+n}$, and explain the use of this series.

Given $\log_{10} e = \cdot 43429$, find $\log_{10} 1 \cdot 001$ correct to 6 decimal places.

15. Expand in ascending powers of x the expression

$$\frac{1}{(x+1)(x^3+1)}.$$

GEOMETRY.

W. Esson, Esq., F.R.S.

Tuesday, 2nd July 1878. 2 P.M. to 5 P.M.

1. The three interior angles of every triangle are together equal to two right angles.

Find the angle of a regular pentagon.

2. The complements of the parallelograms which are about the diameter of any parallelogram are equal to one another.

Two straight lines parallel to the sides of a parallelogram divide it into four parallelograms; if any two of these which have a common angle are equal, the intersection of the straight lines lies upon a diagonal of the original parallelogram.

3. If a straight line be divided into two equal and also into two unequal parts, the squares of the two unequal parts are together double of the square of half the line and of the square of the line between the points of section.

The squares of the sides of a triangle are together double of the square of half the base and of the square of the line joining the vertex to the middle point of the base.

4. If from a point without a circle there be drawn two straight lines, one of which cuts the circle and the other meets it; if the rectangle contained by the whole line which cuts the circle, and the part of it without the circle, be equal to the square of the line which meets it, the line which meets shall touch the circle.

Draw a circle through two given points to touch a given straight line.

5. Describe a square about a given circle.

Find the angles subtended at the centre of the circle by the three segments made by the sides of the square upon any tangent to the circle.

6. If the angle of a triangle be divided into two equal angles by a straight line which also cuts the base, the segments of the base shall have the same ratio which the other sides of the triangle have to one another.

Given the base and the ratio of the sides of a triangle, find the locus of its vertex.

7. Draw a straight line perpendicular to a plane from a given point above it.

Find the locus of the foot of a perpendicular drawn from a given point above a plane to a straight line in the plane passing through a given point in the plane.

8. Every solid angle is contained by plane angles which together are less than four right angles.

Show that there are only five regular solid figures.

9. The straight lines joining the extremities of two focal chords of a conic intersect in the directrix.

If the chords are equal, one pair of the joining lines are parallel to the directrix.

10. Draw a pair of tangents to a parabola from a given point. If the given point is on the directrix, show from your construction that the tangents include a right angle.

11. The perpendiculars from the foci on any tangent to an ellipse meet the tangent on the auxiliary circle.

Given in position one focus and a tangent, and in magnitude the minor axis of an ellipse, find the locus of the other focus.

PURE MATHEMATICS. (1.)

W. H. BESANT, Esq.

1. If α be the least positive angle which has a given sine, prove that the general expression for the angle is $n\pi + (-1)^n\alpha$, where n is zero or any positive or negative integer.

Solve the equation

$$\sin\theta\cos\theta + \sin\alpha\cos\alpha = \sin(\alpha + \theta).$$

2. Find $\tan\frac{A}{2}$ in terms of $\tan A$, and explain the existence of two values.

Prove that $\sec^2 15° = 4\tan 15°$, and that

$$\tan 7° 30' = \sqrt{6} + \sqrt{2} - 2 - \sqrt{3}.$$

3. Prove that in any triangle ABC,

$$a\sin\frac{1}{2}(B - C) = (b - c)\cos\frac{A}{2}, \text{ and } a\cos\frac{1}{2}(B - C) = (b + c)\sin\frac{A}{2}.$$

Having given $A = 60°$, and $\frac{b}{c} = \frac{\sqrt{3} + 1}{2}$, find the angles B and C.

4. Having given two sides and the included angle of a triangle, find the other angles and the third side.

Ex. $A = 54°$, $b = 2{\cdot}25$ feet, $c = 1{\cdot}75$ feet, find B and C, having given

$\log_{10} 2 = {\cdot}301030$, L cot $27° = 10{\cdot}292834$,
L tan $13°\ 47' = 9{\cdot}389724$, L tan $13°\ 48' = 9{\cdot}390270$.

If AD, BE, CF be the perpendiculars from the angular points of a triangle ABC upon the opposite sides, prove that the areas of the triangles DEF, ABC are in the ratio of

$2 \cos A \cos B \cos C : 1$.

5. Write down the series for $\sin x$ and $\cos x$ in powers of x, and prove that

$$2\cos x = \epsilon^{x\sqrt{-1}} + \epsilon^{-x\sqrt{-1}} \text{ and } 2\sqrt{-1}\sin x = \epsilon^{x\sqrt{-1}} - \epsilon^{-x\sqrt{-1}}.$$

Having given $(1 + c)\tan x = (1 - c)\tan y$, prove that

$$x = y - c\sin 2y + \frac{c^2}{2}\sin 4y - \frac{c^3}{3}\sin 6y + \&c.$$

6. Prove that the equation of a straight line, referred to oblique or rectangular axes, is

$$\frac{x}{a} + \frac{y}{b} = 1,$$

a and b being the intercepts on the axes.

A and B are two fixed points on the axis of x, and parallel straight lines through A and B meet the axis of y in C and D; find the locus of the point of intersection of the straight lines AD, BC.

7. Trace the loci of the equations

(1.) $r\cos\theta = a$, (2.) $r = a\cos\theta$,
(3.) $x^2 + y^2 + ax + by + c = 0$, (4.) $xy = c(x + y)$.

What is the interpretation of the left-hand member of the equation (3), when the point (x, y) is not a point on the curve represented by the equation?

8. Define the radical axis of two circles, and prove that the radical axes of three circles meet in a point.

If k be a variable parameter, prove that the equation,

$$x^2 + y^2 + c^2 = 2kx,$$

represents a series of coaxal circles.

9. Find the equations of the tangent and normal at a point P of the parabola $y^2 = 4ax$, and if $a\mu^2$, $2a\mu$, be the co-ordinates of the point, prove that the equations are

$$\mu y - x = \mu^2 a, \text{ and } y + \mu x = 2\mu a + \mu^3 a.$$

If the normal at P meet the curve again in Q, prove that the co-ordinates of Q are

$$a\left(\mu + \frac{2}{\mu}\right)^2, \text{ and } -2\mu a - \frac{4a}{\mu}.$$

10. Prove that the equation of the tangent at a point of an ellipse may be written in the form

$$x\cos\theta + y\sin\theta = \sqrt{a^2\cos^2\theta + b^2\sin^2\theta},$$

and show that the locus of the point of intersection of two tangents at right angles to each other is a circle.

11. Find the position of the centre of the curve,

$$y^2 - 6xy + 10x^2 + 2x = 0;$$

trace the curve, and find the lengths of its axes.

12. Show how to solve the equation $x^n - 1 = 0$.

If the roots are $1, \alpha, \beta, \gamma, \ldots\ldots$ prove that

$$(1 - \alpha)(1 - \beta)(1 - \gamma) \ldots = n.$$

13. If $f(x)$ be a rational algebraic function of x, prove that an odd number of the number of the real roots of the equation $f'(x) = 0$ lies between every two of the real roots of the equation $f(x) = 0$.

Find the number and position of the real roots of the equation

$$3x^5 - 40x^3 + 240x + 11 = 0.$$

PURE MATHEMATICS (2.)

W. Esson, Esq., F.R.S.

Wednesday, 3rd July 1878. 2 P.M. to 5 P.M.

1. Define differential coefficient, give a geometrical illustration of the definition, and find from first principles the differential coefficients of a^x and $\tan x$.

2. Prove that $\frac{du}{dx} = \frac{du}{dy} \cdot \frac{dy}{dx}$, and differentiate

$$\log\left(\frac{1 - \cos x}{1 + \cos x}\right)^{\frac{1}{2}}, \quad \tan^{-1}\frac{(a^2 + x^2)^{\frac{1}{2}} + (a^2 - x^2)^{\frac{1}{2}}}{(a^2 + x^2)^{\frac{1}{2}} - (a^2 - x^2)^{\frac{1}{2}}}.$$

3. Establish Leibnitz's theorem for the n^{th} differential coefficient of a product of two functions of one variable.

If $y = \sin^{-1}x$, show that

$$(1 - x^2)\frac{d^{n+2}y}{dx^{n+2}} - (2n + 1)\,x\,\frac{d^{n+1}y}{dx^{n+1}} - n^2\frac{d^ny}{dx^n} = 0.$$

4. Expand in a series of ascending powers of x as far as x^4

$$(1) \log \sec x, \quad (2) \frac{x}{e^x - 1}, \quad (3) (1 + x)^x.$$

5. Show how to evaluate indeterminate expressions of the form $\{f(x)\}^{\phi(x)}$, and find the value of

$$(2x - x^2)^{-1} \cos\frac{\pi}{2}(x - 1) \cdot \left(\sin\frac{\pi}{x}\right)^{\frac{1}{2-x}}, \text{ when } x = 2.$$

6. Find the equation of the tangent at any point of the curve $f(x, y) = 0$, and show that in general $n(n - 1)$ tangents can be drawn from a point to a curve of the n^{th} degree.

Find the locus of the point of intersection of tangents to the curve $x = a\cos^3\theta$, $y = a\sin^3\theta$, which include a right angle.

7. Trace the curves

(1) $(x-a)^2y=(y-b)^2x$;

(2) $r=a\dfrac{\theta-\alpha}{\theta+\alpha}$.

8. Find, from first principles, the values of

$$\int_b^a x^n dx, \quad \int_0^{\pi} \sin x\,dx, \text{ and integrate}$$

$$\frac{dx}{x(x^3+1)}, \quad \frac{dx}{a+b\cos x}, \quad \frac{dx}{(a^3+x^3)^{\frac{1}{3}}}.$$

9. If $u_n=\int x^n(2ax-x^2)^{\frac{1}{2}}dx$, show that

$$(n+2)\,u_n-(2n+1)\,au_{n-1}+x^{n-1}(2ax-x^2)^{\frac{1}{2}}=0,$$

and find the value of

$$\int_0^{2a} x^n(2ax-x^2)^{\frac{1}{2}}dx.$$

10. Find the length, area, and volume of revolution about the prime radius of the curve $r=a(1+\cos\theta)$.

11. Find the area bounded by the parabolas $y^2=ax$, $x^2=ay$; and the area of the surface formed by the revolution of a cycloid about its axis.

12. Determine the condition that the straight lines

$$\frac{x-a_1}{l_1}=\frac{y-b_1}{m_1}=\frac{z-c_1}{n_1}, \quad \frac{x-a_2}{l_2}=\frac{y-b_2}{m_2}=\frac{z-c_2}{n_2},$$

should intersect, and find the angle between them.

Find the angles of the triangle formed by the intersection of the plane $\frac{x}{a}+\frac{y}{b}+\frac{z}{c}=1$, with the co-ordinate planes.

13. Find the equation of a plane passing through a given point, and (1) containing, (2) perpendicular to, the line of intersection of two given planes.

Find the equations of the planes through the middle points of the sides of the triangle, formed as in the preceding question, and perpendicular to them respectively.

14. Find the equations of the tangent plane and normal at any point of the ellipsoid

$$\frac{x^2}{a^2}+\frac{y^2}{b^2}+\frac{z^2}{c^2}=1,$$

and show that the intercept on the normal between the point of contact and the plane of yz is a^2p^{-1}, p being the perpendicular from the centre on the tangent plane.

PURE AND MIXED MATHEMATICS (Easy Problems).

Rev. H. W. WATSON.

Thursday, 4th July 1878. 10 A.M. to 1 P.M.

1. A circle is described about the triangle ABC, and the tangent to this circle at A meets CB produced in D. The line AE bisecting the angle BAC meets BC in E, and the line DPQ bisecting the angle ADB meets the circle in P and Q. Prove that
   (1.) The line DE is equal to the line DA.
   (2.) The angle ABP is equal to the angle DEP, and the angle ABQ is equal to the angle QEC.

2. The tangents at the points A and B, the extremities of the chord AB, of a circle whose centre is O intersect in D. Prove that the tangents at the extremities of all chords of the circle which are bisected by AB intersect upon the circle whose diameter is OD.

3. Construct a square such that two of its sides shall pass through the given points B and C respectively, and the remaining two intersect in the given point A.

4. Upon the sides of the triangle ABC the equilateral triangles A'BC, B'AC, and C'AB are constructed, the vertices A and A' being on opposite sides of BC, and so of the rest. Prove that the lines AA', BB', and CC' meet in a point.

5. If z be eliminated between the equations

   (1) $(x + y + z)(ax + by + cz) = 2(ax^2 + by + cz^2)$ and

   (2) $\sqrt{ax} + \sqrt{by} + \sqrt{cz} = 0$,

   prove that the resulting equation in x and y becomes

   $$\sqrt{xy}(\sqrt{ax} + \sqrt{by})(\sqrt{a}(c - b)\sqrt{x} - \sqrt{b}(a - c)\sqrt{y}) = 0,$$

   and, therefore, that the only solutions of 1 and 2, different from zero, are

   $$\frac{x}{a(b - c)^2} = \frac{y}{b(c - a)^2} = \frac{z}{c(a - b)^2}.$$

6. Prove that

   $$\frac{bc}{(a - b)(a - c)}(x - a)^2 + \frac{ca}{(b - c)(b - a)}(x - b)^2 + \frac{ab}{(c - a)(c - b)}(x - c)^2 = x^2.$$

7. If α and β be the roots of $x^2 + x + 1 = 0$, and γ and δ be the roots of $x^2 + px + p = 0$,
   prove that
   $$(\alpha - \gamma)(\alpha - \delta)(\beta - \gamma)(\beta - \delta) = (p - 1)^2.$$

8. In any arithmetic series whose first term is a, last term l, and number of terms n, prove that the product of any two terms equidistant from the two ends respectively, and also that the square of the middle term of the series, when the number of terms is odd, is greater than al. Hence prove that the factorial product $1.2...n > (\sqrt{n})^n$.

9. If c_0, c_1, &c., and c_n be the coefficients of x^0, x^1, &c., x^n in the expansion of $(1 + x)^n$, prove that

$$c_0 + \frac{c_1}{2} + \frac{c_2}{3} \cdots + \frac{c_n}{n+1} = \frac{2^{n+1} - 1}{n+1}.$$

10. If $\frac{p_{n-2}}{q_{n-2}}$ and $\frac{p_n}{q_n}$ be the $n - 2^{\text{th}}$ and n^{th} convergent respectively to any continued fraction, and if m_n be the n^{th} quotient, prove that

$$p_n q_{n-2} - p_{n-2} q_n = (-1)^n m_n.$$

11. There is a number of six digits such that when the extreme left hand digit is transferred to the extreme right hand, the rest being unaltered, the number is increased threefold. Prove that the left hand digit must be 1 or 2, and find the number in either case.

12. There are five bags, each containing six balls coloured red, orange, yellow, green, blue, and indigo. How many different groups of balls may be formed by taking one ball from each bag in every group?

13. In the game of roulette there are 38 holes, numbered 00, 0, 1 ... 36 respectively.

A player may stake on any hole except 00, and if the ball runs into the selected hole he receives back his original stake increased 36 fold, otherwise he forfeits his stake.

Prove that in the long run he loses $\frac{1}{19}$th of all the money staked by him.

If he divides the risk by staking on r holes with the understanding that if successful he receives $\frac{1}{r}$th of 36 times the stake, prove that his expectation of loss remains the same.

14. If $\frac{\log x}{x(y+z-x)} = \frac{\log y}{y(z+x-y)} = \frac{\log z}{z(x+y-z)}$, prove that

$$x^y y^x = y^z z^y = z^x x^z.$$

15. If $(\sin^2\alpha - \sin^2\beta)(\sin^2\alpha - \sin^2\gamma) = \sin^2\beta \sin^2\gamma \cos^4\alpha$, prove that

$$\tan^2\alpha = \tan^2\beta + \tan^2\gamma.$$

16. In the construction of No. 1 prove that BP, CP, and AP are in geometrical progression.

17. If S be the area and s the semiperimeter of a triangle whose sides are a, b, and c, prove that

$$x^3 - x^2\left(\frac{abc}{S} + \frac{S}{s}\right) + xs^2 - Ss = 0,$$

when x is equal to the radius of any one of the described circles.

18. Apply the result of No. 7, or any other method, to prove that in any triangle

$$\frac{bc}{(a-b)(a-c)} \tan^2\frac{B}{2} \tan^2\frac{C}{2} + \frac{ca}{(b-c)(b-a)} \tan^2\frac{C}{2} \tan^2\frac{A}{2} + \frac{ab}{(c-a)(c-b)} \tan^2\frac{A}{2} \tan^2\frac{B}{2} = 1.$$

19. If O be the centre of the circle circumscribing the triangle ABC, prove that the resultant of three forces, each equal to P, along OA, OB, and OC respectively is

$$P.\sqrt{1 - 8\cos A\cos B\cos C}.$$

20. The uniform equilateral triangle ABC is supported with the angle A in contact with a smooth wall by means of the string BD equal in length to a side of the triangle, and fastened to the point D vertically above A. Prove that the distances of B and C from the wall are as 1 : 5.

21. A balloon is moving vertically upwards with the velocity v, and a rifle is aimed so as to hit it, the bullet's initial velocity being $(\sqrt{3} + 1)\,v$. If the angle of elevation of the balloon from the rifleman be 45°, prove that the angle of elevation of the rifle must be 60°.

22. A number of particles are projected from the same point A with the same velocity v, and different angles of elevation. Prove that the parabola described by each particle will touch the parabola whose focus is A and vertex a point at the height $\frac{v^2}{2g}$ vertically above A.

Prove also that the time in which any particle reaches the aforesaid parabola $\frac{v}{g\sin\theta}$, where θ is the angle of projection, and that its direction of motion is then perpendicular to the direction of projection.

STATICS AND DYNAMICS.

W. GARNETT, Esq.

Thursday, 4th July 1878. 2 P.M. to 5 P.M.

1. Show how the measure of a physical quantity varies as the unit, in terms of which it is measured, is changed.

How does the unit of work vary when the units of length and of time are changed, the unit of mass remaining unaltered?

The unit of work is that done in raising 50 tons through 20 feet, the unit of acceleration is 16 foot-seconds, and the unit of density that of a substance of which a cubic yard contains three quarters of a ton. Find the units of length, mass, time, and force.

2. Enunciate the proposition known as the parallelogram of forces, and shew that it is a consequence of Newton's second law of motion and the parallelogram of accelerations.

3. Investigate the conditions necessary for the equilibrium of a body capable of turning about a fixed axis.

Show that, in whatever way a force may act, the work done by it during an indefinitely small and given displacement of a body about a fixed axis is proportional to the moment of the force about that axis.

4. What is the object of a machine?

Find the relation between the power and the load in the system of pulleys in which each pulley hangs by a separate string, the pulleys being of the same weight and the strings parallel.

Show that the principle of "virtual velocities" holds in this case.

5. Enunciate the proposition known as the triangle of forces.

Show that this proposition enables us to find, in certain cases, by a geometrical construction, the tensions and pressures in the several ties and struts of a jointed structure, such, for example, as a roof truss.

A triangle ABC is formed of three rods jointed at the angles, and B is fixed in such a way that the structure can turn freely about it. A given weight is suspended at A and a *horizontal* force applied at C so that AB remains horizontal. Neglecting the weight of the frame, draw a diagram representing the stresses in each of the rods and the forces at B and C.

6. Define the centre of gravity of a body.

Why does the centre of gravity of a body always coincide with its centre of mass (or inertia)?

Find the centre of gravity of a thin conical shell of uniform thickness.

7. A shot of 1000 lbs. leaves a gun with a velocity of 1500 feet per second. How long must the shot have been under the action of the powder supposing the average pressure upon it to have been equal to the weight of 1200 tons?

If the shot penetrate a target to the depth of two feet and then come to rest, what will be the average pressure exerted on the target?

8. Describe Atwood's machine, and explain how you would show experimentally by its means that the weight of a body is independent of its vertical velocity.

A smooth body and a rough body, each of one pound, are connected by an inextensible string 4 feet in length and placed side by side and close together on a plane inclined 45° to the horizon. If the coefficient of friction between the plane and the rough body be $\frac{1}{2}$, discuss the motion completely and find the impulse on the string at the instant it becomes tight, and its tension subsequently.

9. A particle is projected with velocity v at an elevation α; find the latus rectum of its path.

A number of particles are projected from the same point in different directions, but so that the horizontal component of the velocity of each is the same. Find the locus of the foci of their paths.

10. Show that the time of oscillation of a heavy particle on a smooth cycloid whose axis is vertical and vertex downwards is independent of the extent of the arc.

The weight of 29·905 cub. ins. of mercury in London is equal to that of 29·898 cub. ins. in Manchester. How many seconds will a pendulum clock gain in a year in Manchester if properly regulated for London?

MIXED MATHEMATICS (HIGHER).

W. D. NIVEN, Esq.

Friday, 5th July 1878. 10 A.M. to 1 P.M.

1. Define Acceleration, and find the tangential and normal accelerations of a point describing a plane curve.

   A tangent rolls on a given circle with uniform angular velocity: and a point moves with relative velocity v along the tangent. Find the acceleration of the point.

2. A particle describes the curve $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ under the action of a force parallel to the minor axis. Find the law of the force, as also its absolute value if the time from the end of one latus rectum to the next be one second.

3. A particle moves freely under the action of a known central force. Find the differential equation of the path described, and show how to solve it.

   E.g., The force being $\frac{\mu}{r^3}$, and the velocity at the apsidal distance c being $\sqrt{\frac{2a-c}{ac}}\mu$, find the equation of the path and the periodic time.

4. A particle is constrained to move in a curved line under the action of given forces. Find the pressure on the curve.

   The curve being a circle, and the only impressed force an attraction varying as the distance, and directed to a point outside the circle, a particle has a velocity V imparted to it causing it to move on the inside of the circle; find the least value of V that the particle may describe the complete circle.

5. Six forces act along the sides of a regular hexagon taken in order. Find the equation of the line of action of their resultant, the origin of co-ordinates being the centre of the hexagon.

   What are the conditions that the forces may reduce to a couple?

6. Find the general conditions among a system of forces that they may hold a rigid body in equilibrium.

   A heavy screw can turn about a vertical axis. If the friction be such that a weight P, in addition to its own weight, is required to make it fall, what force will be sufficient to raise it?

7. Find the general differential equations of equilibrium of a string under the action of given forces.

   Solve these equations in the case of a uniform string suspended from two points in the same horizontal plane, determining in this way the equation of the curve in which the string hangs, and the tension at any point.

8. A body with a plane face is placed on the top of a fixed sphere. What must be the maximum of distance of the centre of gravity of the body from its plane face that it may rest on the sphere in stable equilibrium?

9. Show how to find the resultant pressure on any surface exposed to fluid pressure.

A circular cone, whose dimensions are known, is entirely under water, with its vertex at a known depth and its axis at a known inclination to the vertical. Determine the resultant pressure on its curved surface.

10. Find the centre of pressure of the flat end of the cone in question 9.

11. Explain why it is important to know the metacentre of a floating body.

A ship, in the form of a solid hemisphere, has a mast of uniform thickness erected at its centre, the weight of which is given. Find the greatest length of the mast consistent with the stability of the ship in small angular displacements.

12. Of what gaseous laws is the formula

$$\frac{pv}{1+\frac{t}{273}} = \text{constant}$$

the mathematical expression? Describe any experiments with which you are acquainted, confirming your statements.

A given quantity of air at a uniform temperature is confined in a sphere of given radius, and is acted on by a repulsion from the centre of the sphere, varying as the square of the distance. Find the pressure at any point of the surface of the sphere, the value of the repulsion at the surface being equal to the pressure of air of unit density, and at the same temperature.

CHEMISTRY.

Professor G. D. LIVEING.

Wednesday, 10th July 1878. 10 A.M. to 1 P.M.

1. Define an element in Chemistry. What are the elements of marble, flint, steel, red-lead, ozone, brass?

2. Describe bromine, hydrochloric acid, and lime. Mention in each case substances which resemble them in chemical characters, pointing out both wherein they resemble them and wherein they differ from them.

3. Show how it is proved experimentally that steam contains its own volume of hydrogen, and that marsh gas contains twice its volume of hydrogen.

4. Calculate the density of olefiant gas as compared with air, having given that the density of hydrogen is ·069.

The density of acetylene is found to be $\frac{9}{10}$ that of air. Show what formula this leads to, having given that acetylene consists of carbon and hydrogen in atomic proportion. Send up the whole work.

5. Describe the process of preparing nitric acid. What is the nature, and what is the cause, of the red fumes produced in the process?

   How is nitric acid affected by admixture with hydrochloric acid?

6. What do you understand by a bi-basic acid, and what are the experimental tests by which the bi-basic character is recognised? Illustrate your answer by two cases of bi-basic acids.

7. Describe and explain the salt-cake process of preparing carbonate of soda from common salt.

8. What is the quantivalence of an element? Illustrate by the cases of arsenic, iron, and lead, pointing out, moreover, the variations of quantivalence which these elements exhibit.

9. Describe and explain a method of preparing pure silver nitrate from ordinary standard silver.

10. The analysis of a compound gave, of potassium 19·40, of magnesium 5·97, of SO^4 47·76, of water 26·87. Construct a formula for the compound, and send up all the work. (K : Mg : S = 39 : 24 : 32.)

ELECTRICITY AND MAGNETISM.

Professor G. D. LIVEING.

Monday, 8th July 1878. 10 A.M. to 1 P.M.

1. Describe a gold leaf electroscope. An electroscope is taken on to the roof of a house, and when there the knob is for a moment touched with a wire; on now taking the electroscope indoors the leaves are found to diverge; show how to determine whether they diverge with positive or negative electricity. Supposing it to be negative, what inference can be drawn from the experiment?

2. Give reasons, founded on general principles, why a man standing under a wide-spreading tree at a distance from the trunk is in a safe position during a thunderstorm.

3. Show, by examples, that there is a loss of potential energy (or a conversion into kinetic energy) when electricity passes from a point of higher to one of lower potential; taking (1) negative electricity produced by friction and passing through air, (2) induced electricity passing through a metallic conductor, (3) voltaic electricity passing through an electrolyte.

4. Give an accurate definition of the capacity of a leyden jar. Show, by reference to a general law, whether more heat can be produced by the discharge of a leyden jar or by the direct discharge, into the ground from the conductor of the machine used to charge the jar, of a quantity of electricity equal to the charge of the jar.

5. Define lines of magnetic force. How are the lines of force due to a bar magnet affected by placing a piece of soft iron at one end of it? Describe the lines of force due to the earth's magnetism at London. What are the means of telling how much closer they are at one place than at another?

6. Define the magnetic moment of a bar magnet; also a unit magnetic pole. Show how to find practically the ratio of the magnetic moments of two given bar magnets.

7. Describe a sine galvanometer, and prove the property from which it derives its name. If you require to measure powerful currents by such an instrument state what method you would employ in order to get accurate results, and the principle on which the method depends.

8. A single Bunsen's cell is found, when tested by a galvanometer, to give the same deflexion as two Daniell's cells joined up in the usual way; if now the positive pole of the Bunsen's cell be connected to the positive pole of the Daniell's battery, and the two negative poles be joined up to the galvanometer, will the needle necessarily remain at zero? Give reasons for your answer.

9. Explain the use of a relay in a Morse telegraph, how it is employed, and how put in action.

10. An insulated wire is coiled round a bar of copper and a current passed for a short time through the wire; what effects will be produced in the bar? It is more difficult to draw the bar out of the coil while the current is passing than when it is not passing; state the general law to which this may be referred.

HEAT AND LIGHT.

Professor G. D. LIVEING.

Tuesday, 9th July 1878. 2 P.M. to 5 P.M.

1. The weight of mercury in a thermometer is 15 grams, and the length of a degree 2 millimeters; what is the section of the tube; the specific gravity of mercury being 13·5 and its coefficient of cubical expansion ·00018?

2. How are the boiling point, the freezing point, and the point of maximum density, of water affected by the presence of common salt in solution in it? State general laws to which these effects, or any of them, may be referred.

3. How does radiation vary with the distance from the source? Show how this may be proved experimentally (1) for heat, (2) for light.

4. 1 lb. of iron at 100° C. is immersed in 40 lbs. of mercury at 10°, and the resulting temperature of the two substances is 17°; calculate the specific heat of iron, that of mercury being ·03.

How does the specific heat of water change as the temperature rises; and how can this be proved?

5. Illustrate, by examples, the statement that the whole energy of a moving mass may be converted into heat, but that it is impossible to convert into work the whole heat of any hot mass.

6. A ray of light is incident obliquely on a sheet of plate glass; state how it is affected. If the reflected ray be next incident on a rhomb of Iceland spar describe the further effect which that will have on it.

7. Explain the position in which a man sees his own face in a concave mirror. Show within what limits his eye must be placed in order that he may see with that eye its reflection in a concave spherical mirror of one foot radius and 6 inches across the face. As he moves his eye near those limits how does the image appear to change?

8. Describe particularly what you observe when you look at a square of white on a black ground through a prism with its axis parallel to a side of the square; and explain the appearance.

9. Draw a figure representing the course of two rays through an astronomical telescope, the rays proceeding from the same point not in the axis.

   Explain why Jupiter's satellites are visible through such an instrument, but not without.

10. Explain one method by which the velocity of light has been determined.

MECHANICAL PHILOSOPHY AND ASTRONOMY.

W. GARNETT, Esq.

Saturday, 6th July 1878. 10 A.M. to 1 P.M.

[*Only ten questions should be attempted, of which at least two should be chosen from the last four.*]

1. Define acceleration, force, work, and energy.

   Explain how each of these quantities is measured in terms of the fundamental units of length, mass, and time only.

   What is meant by the horse-power and what by the duty of an engine?

2. Describe *one* of the following machines, and find the relation between the power and the load in the example you select:

   α. Perrault's crane.

   β. Weston's differential pulley.

   γ. A weigh-bridge suitable for weighing waggons.

   δ. A machine for testing the tensile strength of iron or cement.

8. Describe the action which takes place between two rough surfaces in contact when an attempt is made to cause one to slide over the other.

What is meant by the limiting angle of friction?

Explain the efficiency of friction wheels (as employed in Atwood's machine).

4. State Hooke's law respecting the relation between the tension and extension of a bar.

A rectangular beam is supported at each end and loaded in the middle; describe the condition of the several fibres with respect to extension or compression.

What purpose is served by the web of a girder?

5. What experimental evidence have we for believing that the earth attracts all kinds of matter alike, that is, that the weight of a body in a given place is proportional to its mass?

Describe the motion of a ball projected at an elevation of 30° with a velocity of 128 feet per second.

6. A heavy particle is suspended from a fixed point by a string whose weight may be neglected and is describing a horizontal circle uniformly. Mention all the forces acting on the particle, and state clearly what their resultant is.

If the mass of the particle be one pound, the length of the string five feet, and if the particle make three revolutions per second, what is the tension of the string?

7. What is the resultant pressure exerted by a heavy fluid upon a body immersed in it?

The metal of an iron pipe, whose internal diameter is $3\frac{1}{2}$ inches, is a quarter of an inch in thickness, and the pipe is exposed to a pressure of a column of water 300 feet in height. If the mass of a cubic foot of water be $62\frac{1}{2}$ lbs., to what tension per square inch will the iron be subjected?

8. Why does a drop of oil suspended in a mixture of alcohol and water assume a spherical form?

Explain why the height to which water will rise in fine glass tubes is inversely proportional to the diameter of the tube.

By partly filling a spherical glass bulb with mercury it is possible to obtain a perfectly flat surface to the metal. When will this be the case?

9. Give a brief account of the constitution of a gas in accordance with the dynamical theory, and explain the manner in which pressure is exerted by a gas upon a surface exposed to it.

Show that if two streams of gas are passing one another, diffusion must tend to bring them to relative rest.

10. Explain the principle of the indicator diagram.

Briefly describe Richards' steam indicator. Draw the diagram of some high pressure engine working expansively, and mention the actions to which the several portions of the curve correspond.

11. Describe the transit circle.

Why are microscopes placed at opposite extremities of a diameter of a graduated circle?

How would you determine the latitude of a fixed observatory?

12. Describe the form and state the approximate dimensions of the earth.

What observations and measurements are necessary in order to determine its true figure?

Give a summary of the evidence in favour of the earth's rotation.

13. What is the equation of time?

To what peculiarities in the earth's motion is it due?

How many times a year does it vanish, and why?

14. What is the cause of the apparent displacement of the heavenly bodies known as aberration?

What is the effect of aberration on the apparent position of a fixed star at different times throughout the year?

Mention some familiar phenomenon which illustrates aberration.

LOGIC.

Rev. T. FOWLER.

Tuesday, 9th July 1878. 10 A.M. to 1 P.M.

1. Enumerate the faults to which a syllogism is liable, giving instances of each.

2. Examine the following arguments:

(α.) Money being a barren product, it is contrary to nature to make it reproduce itself. Usury, therefore, is unnatural, and, being unnatural, is unjustifiable.

(β.) England has thriven under representative institutions, and many other nations of Europe have copied her example, in this respect, with success. It is, therefore, desirable to establish such institutions wherever it is possible.

(γ.) The study of mathematics is essential to a complete course of education, because it induces a habit of close and regular reasoning.

(δ.) Æschines must be either inconsistent or unpatriotic; for, if he joined in the public rejoicings, his conduct was inconsistent with his former professions, and, if he did not join in them, he was wanting in patriotism.

3. Is it possible to lay down any rules for testing the value of circumstantial evidence? Show the necessity for the exercise of caution in admitting such evidence.

4. What are the various senses in whlch the word Analogy has been used? Distinguish, giving instances, between good and bad analogies.

5. What constitutes a Valid Induction? Distinguish it from a legitimate hypothesis.

6. Explain and illustrate the following terms: Simple Conversion, Ignoratio Elenchi, Fallacy of Division, Question-begging Epithets, Subaltern Opposition, Plurality of Causes, Vera Causa, Empirical Law.

7. Exemplify the false reasoning arising from the confusion of—
   (α.) Genus and Species.
   (β.) Property and Accident.
   (γ.) Contrary and Contradictory Terms.
   (δ.) Cause and Effect.

8. Compare the modes of reasoning employed in Botany, Chemistry, and Geometry.

ELEMENTS OF POLITICAL ECONOMY.

T. C. SANDARS, Esq.

Friday, 5th July 1878. 2 P.M. to 5 P.M.

1. Illustrate, by examples, the following statement, "The Science of "Political Economy often only affirms tendencies, and therefore "the results deduced from its principles do not always come into "immediate operation."

2. Give an example (with figures) from any agricultural or manufacturing enterprise, illustrating what is meant by profit.

3. Show the influence of credit on prices.

4. Examine some of the chief causes which determine the price of Consols.

5. Show that the productiveness of labour is partly the cause and partly the effect of the fertility of the land.

6. What conditions must be fulfilled in order that a nation which has once adopted an inconvertible paper currency may be able to resume specie payments?

7. Give historical instances of taxes imposed in England or elsewhere that have offended against one or more of Adam Smith's canons of proper taxation.

8. With what limitations must the statement be accepted that the premium on bills of exchange is equal to the cost of transmitting gold?

9. Examine the causes and consequences of the absorption of silver by the East.

10. It considering the course and consequences of international trade, what degree of importance is to be assigned to the cost of carriage?

SANSKRIT (1).

Professor E. B. COWELL.

1. Apply the rules of Sandhi to

पितुः + रक्षम्,
तस्मिन् + अहे,
भार्ये + इमे,
हे भ्रातः + एहि,
तान् + घोडा,
वधिक् + मुख.

2. Give the ablative singular and nominative plural of वायु, मधु (neuter), मन् and वाच्.

3. Give the nominative, accusative, and ablative plural of अप् and पथिन्.

4. Give the ablative singular feminine of प्रत्यच्, निर्यच् and दाढ.

5. Give the nominative and accusative plural feminine of the present participles दम्भत्, घ्नत् and अहत्.

6. Give the nominative, accusative, and instrumental plural masculine of the perfect participle चक्रवस्.

7. Give the genitive plural, masculine and feminine, of त्रि and चतुर्.

8. Give the ablative, singular and plural, of the pronoun अस्मद्.

9. Give the instrumental plural masculine of इदम् and अदस्.

10. Write out the singular of the present, Parasmaipada and Atmanepada, of लिह् (2).

11. Give the first person plural of the potential Parasmaipada of गम्, गह् (गृह्णाति) and भुज् (भुनक्ति).

12. Give the third person, singular and plural, of the reduplicated perfect Parasmaipada of कृ, हृ, नी, व्यध्, हन्, वस्, and भू.

13. From what roots do the following Aorists come, अयाचम्, अधिक्षत्, and अधित? Give their second person plural.

14. Give the third person singular of the aorist of the causal Parasmaipada of हृ, पत्, and भू.

15. Give the third person singular of the present passive of वस्, खण्, and हृ.

16. Give the infinitive and indeclinable participle of दृश्, ग्रह्, दुह्, यज्, स्वप्, and explain the principle involved.

17. Give the third person singular of the intensive, with य, of कृ and हृ, and without य, of मुच् and दृश्.

18. Illustrate by examples the principal uses of the locative case in Sanskrit.

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19. *Translate into Sanskrit:*

a. The boy wept, and said, "My father is old, my mother is blind, whither shall I go for refuge?"

b. A merchant embarked on board a ship and went to a distant country. His ship was broken by the wind, and he and a few friends escaped with difficulty to an island. He clasped his hands and said, "Joy! we have not lost our most precious possessions!" His friends said, "We have lost all our riches; how can our lot be more wretched?" He answered, "We are alive and safe on the shore."

SANSKRIT (2).

Professor E. B. Cowell.

Translate into English:

I.

कथं भविष्यसि पुनर् माम् अनुस्मृत्य नैषध।
आपान्मुक्तः पुनर्लब्ध्वा बुद्धिं चेतो धनानि च॥

आत्मस्थ ते क्षुधार्त्तस्य परिम्लानस्य नैषध।
कः श्रमं राजमार्दूल नाशयिष्यति तेऽनघ॥

दमयन्ती तु शुश्राव रथघोषं नलस्य तम्।
यथा मेघस्य नदतो गभीरं जलदागमे॥
परं विस्मयम् आपन्ना श्रुत्वा नादं महास्वनम्।
नलेन संगृहीतेषु पुरैव नलवाजिषु॥
सदृशं हयनिर्घोषं मेने भैमी तथा हयाः।
प्रायादस्यास्य शिखिनः प्राज्ञास्यैव वारणाः॥

Nala.

Parse the word *drtta.*

II.

यो ऽधिकाद्योजनशतांत्पश्यतीहामिषं खगः।
स एव प्राप्तकालस्तु पाशबंधं न पश्यति॥

अपरं च। अग्निदिवाकरयोर्यद्दीप्तं गजभुजंगमयोरपि बंधनम्।
मतिमतां च विलोक्य दरिद्रतां विधिरहो बलवानिति मे मतिः॥

योऽस्ति यस्य यदा मांसमुभयोः पक्षतान्तरम्।
एकस्य क्षणिका प्रीतिरन्यः प्राणैर्विमुच्यते॥
मर्तव्यमिति यद्दुःखं पुरुषस्योपजायते।
अक्षयेणानुमानेन परोऽपि परिरक्षितुम्॥

मुकुटे रोपितः काचस्त्वरत्नाभरणे मणिः।
न हि दोषो मणेरस्ति किंतु स्वाधोरविज्ञता॥
पश्य। बुद्धिमाननुरक्तोऽथमयं शूर इतो भयं।
इति भृत्यविचारज्ञो भृत्यैरापूर्यते नृपः॥

Hitopadeśa.

III.

The birth of the goddess Śrí (Padmá).

कदाचिन्नारदो धीरः पिस्पृक्षुः सरितं शुचिं।
दृक्षेण सहितो गङ्गां जगामावततार च॥
नद्याः पुलिनमासाद्य सूक्ष्मक्षौमनवालुकम्।
चक्रतुस्तो तथासीनो महर्षिकथिताः कथा॥
अथ भास्करमुद्यन्तं रश्मिजालपुरस्कृतम्।
पूर्णमण्डलमालोक्य तावुत्थायोपतस्थतुः॥
अकस्मात् ज्योतिराकाशे प्रसृतार्चिः समप्रभम्।
तयोः समीपं संप्राप्तं प्रत्यदृश्यत भारत॥
तच्चाभिरूपशोभाभिर् अप्सरोभिः पुरस्कृताम्।
श्रियं ददृशतुः पद्मां साक्षात् पद्मदलेक्षिताम्॥
साऽवरुह्य विमानाग्राद् अङ्गनानामनुत्तमा।
अभ्यागच्छत् त्रिलोकेशं देवर्षिं चापि नारदम्॥

दृक्ष उवाच।

का त्वं केन च कार्येण संप्राप्ता चारुहासिनी।
कुतश्चागम्यते सुभ्रु गन्तव्यं क्व च ते शुभे॥

श्रीरुवाच।

पुण्येषु त्रिषु लोकेषु सर्वे स्थावरजङ्गमाः।
ममात्मभावमिच्छन्तो यतन्ते परमात्मना॥
साहं वै पङ्कजे जाता सूर्यरश्मिविबोधिते।
भूत्यर्थं सर्वभूतानां पद्मा श्रीः पद्ममालिनी॥
राज्ञां विजयमानानां सेनाग्रेषु ध्वजेषु च।
निवासे धर्मशीलानां विषयेषु पुरेषु च॥

Mahábhárata.

IV.

आचार्यश्च पिता चैव माता भ्राता च पूर्वजः ।
नार्त्तेनाप्यवमन्तव्या ब्राह्मणेन विजानता ॥
यं मातापितरौ क्लेशं सहेते संभवे नृणाम् ।
न तस्य निष्कृतिः शक्या कर्तुं वर्षशतैरपि ॥
तयोर्नित्यं प्रियं कुर्यादाचार्यस्य च सर्वदा ।
तेष्वेव त्रिषु तुष्टेषु तपः सर्वं समाप्यते ॥
तेषां त्रयाणां शुश्रूषा परमं तप उच्यते ।
न तैरनभ्यनुज्ञातो धर्ममन्यं समाचरेत् ॥

Manu.

Explain the construction of *kartum* in the fourth line, and translate the following extract from the commentary on the sixth line:

तेष्वेव त्रिषु प्रीतेषु सर्वं तपः चान्द्रायणादिकं फलद्वारेण सम्यक् प्राप्यते ।

CIVIL SERVICE OF INDIA.

Open Competition of July 1878.

TABLE OF MARKS.

NOTE.—The following extract from the Tenth Report of the Civil Service Commissioners refers to a change in the mode of assigning marks :—"It has already "been mentioned as one of the ruling principles of these examinations that no candidate should be allowed any credit at all for taking up a subject in which he is a "mere smatterer. Hitherto we have thought it enough, in conformity with this "principle, to strike out all marks which indicated less than a competent knowledge "of the subject selected; leaving those whose knowledge exceeded, by ever so "little, the minimum of competence, to count all the marks assigned to them. We "are of opinion, however, that superficial study may be more effectually discouraged "by allowing no credit for slight knowledge even to those candidates who succeed in "passing beyond it. We propose, therefore, that from the marks of all candidates "alike a number answering to this slight knowledge shall be deducted; but that it "shall be possible, nevertheless, for any candidate who may show remarkable "proficiency in any subject to obtain the full number of marks allotted to that "subject."

On this occasion a deduction of 100 has been made from the marks assigned in each subject, except English Composition and Mathematics.

Open Competition of July 1878.—Table of Marks.—Selected Candidates.

Order of Merit.	No. in Examination.	NAME.	Age on 1st January 1878.	NUMBER OF MARKS OBTAINED.																		
				English			Greek.	Latin.	French.	German.	Italian.	Mathematics.	Natural Science.					Logic.	Political Economy.	Sanskrit.	Arabic.	Total.
				Composition.	History.	Literature.							Chemistry.	Electricity and Magnetism.	Heat and Light.	Mechanical Philosophy and Astronomy.					
				Maximum Number of Marks.																		
				300	300	300	600	800	500	500	400	1,000	500	300	300	300	300	300	500	500		
1	38	Payne; Charles Wynter	18	180	78	104	312	560	229	—	—	585	—	—	—	—	—	—	—	—	2,048
2	2	Innes; James Edgeworth	18	192	—	82	171	416	81	31	—	561	—	160	—	153	—	—	—	—	1,847
3	53	Atkins; John De Courcy	18	205	128	58	189	265	189	—	—	602	—	—	0	92	27	—	—	—	1,705
4	75	Carlyle; Robert Warrand	18	149	—	—	69	296	197	335	203	297	—	13	—	93	—	—	—	—	1,652
5	95	Davis; John Samuel Champion	18	210	—	115	231	417	—	—	—	544	—	—	—	119	—	10	—	—	1,646
6	123	Stack; William George	18	189	95	77	192	319	—	—	—	554	—	—	—	164	—	45	—	—	1,635
7	1	Moscardi; William	18	195	30	15	223	375	270	301	174	—	—	—	—	—	—	0	—	—	1,583
8	130	Hewetson; John	18	219	159	128	175	380	—	—	—	368	—	15	—	—	65	55	—	—	1,554
9	135	Brown; Kenworthy	18	129	66	113	34	361	281	333	202	—	—	—	—	—	—	10	—	—	1,527
10	63	Crowly; Joseph	18	179	143	128	0	441	216	—	—	304	—	—	—	—	109	0	—	—	1,520
11	8	Macleod; Bannatyne	17	206	78	121	—	253	208	109	—	420	—	—	—	118	—	—	—	—	1,513
12	37	Rawson; Edward Creswell	18	190	—	108	42	221	65	—	—	649	—	101	—	129	—	—	—	—	1,505
13	21	Bayne; Charles Gerwien	17	157	148	58	167	493	205	143	104	—	—	—	—	—	—	0	—	—	1,475

Open Competition of July 1878.—Table of Marks.—Candidates not selected.

Order of Merit.	No. in Examination.	NUMBER OF MARKS OBTAINED.																	
		English			Greek.	Latin.	French.	German.	Italian.	Mathematics.	Natural Science.				Logic.	Political Economy	Sanskrit.	Arabic.	Total.
		Composition.	History.	Literature.							Chemistry.	Electricity and Magnetism.	Heat and Light.	Mechanical Philosophy and Astronomy.					
		Maximum Number of Marks.																	
		300	300	300	600	800	500	500	400	1,000	500	300	300	300	300	300	500	500	
14	78	185	97	127	170	411	184	—	139	110	—	—	—	—	5	43	—	—	1,471
15	55	215	53	72	312	598	165	—	—	—	—	—	—	—	—	20	—	—	1,434
16	120	159	—	—	197	248	—	—	—	695	—	—	0	125	—	—	—	—	1,424
17	140	129	—	0	64	262	48	369	—	184	236	70	—	—	—	—	—	—	1,362
18	54	196	90	88	161	302	235	—	—	224	—	—	—	—	57	—	—	—	1,353
19	129	193	0	111	—	230	194	227	179	169	—	—	0	0	—	—	—	—	1,303
20	60	241	101	158	155	298	178	—	168	—	—	—	—	—	—	0	—	—	1,299
21	3	166	96	61	93	238	141	374	107	21	—	—	—	—	—	—	—	—	1,297
22	42	223	0	54	—	130	—	—	—	603	—	—	74	110	—	20	—	—	1,214
23	108	197	88	98	155	295	138	—	—	186	—	—	—	36	—	—	—	—	1,193
24	27	198	83	83	57	482	164	—	122	—	—	—	—	—	—	—	—	—	1,189
25	132	201	93	115	175	370	118	—	—	23	—	—	—	—	41	51	—	—	1,187
26	102	157	0	47	166	380	200	224	0	—	—	—	—	—	—	0	—	—	1,174
27	26	122	—	—	192	413	160	—	—	279	—	—	—	0	—	—	—	—	1,166
	30	263	0	105	184	411	161	—	42	—	—	—	—	—	0	0	—	—	1,166
29	50	130	—	34	—	—	—	—	—	761	—	45	—	155	36	0	—	—	1,161

Open Competition of July 1878.—Table of Marks.—Candidates not selected—*continued.*

Order of Merit.	No. in Examination.	NUMBER OF MARKS OBTAINED.																
		English			Greek.	Latin.	French.	German.	Italian.	Mathematics.	Natural Science.							Total.
		Composition.	History.	Literature.							Chemistry.	Experimental Magnetism.	Heat and Light.	Mechanical Philosophy and Astronomy.	Logic.	Political Economy.	Jurisprudence.	Arabic.
		Maximum Number of Marks.																
		300	300	300	600	800	500	500	400	1,000	500	500	500	500	500	500	500	500
30	6	208	32	30	—	76	209	112	—	232	112	--	--	80	0	0		
	86	160	—	61	—	222	335	200	82	74	—	—	·	0	·	·		
32	84	210	14	52	77	331	0	117	—	240	--	00	·	00		0		
33	88	183	107	83	171	322	106	—	—	76	--	·	·	·	00	10		
34	56	172	0	0	133	352	4	242	—	127	--	--	--		0	0		
35	32	155	139	—	33	322	170	—	—	207	·	--	·		·	00		
36	7	145	72	68	—	184	—	—	—	200	100	14						
	30	160	144	85	—	75	185	—	—	420	·		·			10		
38	4	173	63	106	67	322	127	—	106	188	--	—	—	0		0		
39	31	209	93	83	104	326	127	163	—	—		--	·	·				
40	141	207	88	—	127	287	188	—	—	188	—	0	--	0		--	·	
41	72	101	17	61	0	267	123	—	—	260	—	—	--	--	--	·	·	
42	9	150	105	71	109	272	90	—	—	148	—	--	—	—	--	80	·	
43	45	145	54	91	225	405	—	—	—	114	—	—	—	--	0	—	·	
44	66	91	—	0	39	202	139	—	—	402	—	—	—	90	--	--		
45	131	139	55	0	164	440	104	—	87	—	—	—	—	—	—	0		

Open Competition of July 1878.—Table of Marks.—Candidates not selected—*continued.*

Order of Merit.	No. in Examination.	NUMBER OF MARKS OBTAINED.																
		English			Greek.	Latin.	French.	German.	Italian.	Mathematics.	Natural Science.				Logic.	Political Economy	Sanskrit.	Arabic.	Total.
		Composition.	History.	Literature.							Chemistry.	Electricity and Magnetism.	Heat and Light.	Mechanical Philosophy and Astronomy.					
		Maximum Number of Marks.																
		300	300	300	600	800	500	500	400	1.000	500	300	300	300	300	300	500	500	
46	127	182	41	62	—	242	235	117	—	79	—	—	—	0	39	—	—	—	997
47	67	95	—	28	—	231	229	—	105	308	—	—	—	0	—	—	—	—	996
48	18	155	70	44	191	478	54	—	—	—	—	—	—	—	—	—	—	—	992
	39	220	18	88	43	268	161	126	—	58	—	—	—	—	0	10	—	—	992
50	97	199	0	67	196	365	125	—	—	28	—	0	—	—	0	—	—	—	980
51	10	178	82	50	39	245	153	—	—	44	164	—	4	—	0	11	—	—	979
	16	184	45	29	165	335	113	50	—	58	—	—	—	—	—	—	—	—	979
53	98	134	102	75	146	310	—	—	0	191	—	—	—	—	—	16	—	—	974
54	33	232	82	148	131	354	—	—	—	—	0	—	0	—	—	24	—	—	971
55	110	180	22	37	—	—	129	84	—	440	—	—	—	49	—	—	—	—	941
56	85	122	—	107	0	288	0	—	—	363	—	—	—	57	—	0	—	—	917
57	125	164	71	94	100	289	133	—	80	—	—	—	—	—	—	—	—	—	911
58	23	183	44	36	132	401	—	—	—	111	—	—	—	—	—	—	—	—	907
59	79	177	34	54	161	348	58	—	—	52	—	—	—	—	—	—	—	—	884
60	49	65	0	—	54	218	167	—	—	362	—	—	—	—	—	—	—	—	866
61	22	82	0	0	—	186	163	48	—	277	100	0	—	—	—	—	—	—	856

Open Competition of July 1878.—Table of Marks.—Candidates not selected—*continued.*

Order of Merit.	No. in Examination.	NUMBER OF MARKS OBTAINED.																	
		English			Greek.	Latin.	French.	German.	Italian.	Mathematics.	Natural Science.				Logic.	Political Economy	Sanskrit.	Arabic.	Total.
		Composition.	History.	Literature.							Chemistry.	Electricity and Magnetism.	Heat and Light.	Mechanical Philosophy and Astronomy.					
		Maximum Number of Marks.																	
		300	300	300	600	800	500	500	400	1,000	500	300	300	300	300	300	500	500	
62	57	110	7	46	13	214	99	15	—	326	—	—	—	23	—	—	—	—	353
63	34	179	90	0	149	382	11	—	—	25	—	—	—	—	—	—	—	—	836
64	14	164	0	71	127	386	49	—	—	26	—	—	—	—	—	—	—	—	823
65	20	84	115	0	—	96	106	—	—	395	—	—	0	14	0	10	—	—	820
66	44	145	20	88	0	187	163	87	—	120	0	—	0	—	—	—	—	—	810
67	64	122	43	51	—	41	97	—	—	250	201	—	—	—	—	—	—	—	805
68	100	166	32	34	146	391	—	—	—	—	—	—	—	—	31	2	—	—	802
69	59	123	0	40	0	163	—	—	—	428	—	0	—	45	—	—	—	—	799
70	139	97	—	—	—	242	91	—	—	351	—	—	—	—	—	—	—	—	781
71	82	181	0	48	—	219	85	—	—	157	—	—	—	13	36	36	—	—	775
72	46	166	52	60	—	179	143	156	—	—	—	—	—	—	—	14	—	—	770
73	90	96	13	64	9	207	46	—	—	318	—	—	—	—	0	0	—	—	753
74	119	81	27	19	50	215	—	—	—	344	—	—	—	0	—	—	—	—	736
75	118	197	0	0	191	347	0	—	—	—	—	—	—	—	—	—	—	—	735
76	77	136	38	104	0	116	310	—	—	—	—	—	24	0	0	—	—	—	728
77	87	144	58	51	123	299	48	—	—	—	—	—	—	—	—	—	—	—	723

Open Competition of July 1878.—Table of Marks.—Candidates not selected—*continued.*

Order of Merit.	No. in Examination.	NUMBER OF MARKS OBTAINED.																	
		English			Greek.	Latin.	French.	German.	Italian.	Mathematics.	Natural Science.				Logic.	Political Economy	Sanskrit.	Arabic.	Total.
		Composition.	History.	Literature.							Chemistry.	Electricity and Magnetism.	Heat and Light.	Mechanical Philosophy and Astronomy.					
		Maximum Number of Marks.																	
		300	300	300	600	800	500	500	400	1,000	500	300	300	300	300	300	500	500	
78	128	95	—	—	0	100	114	—	—	332	—	0	—	72	—	—	—	—	713
79	104	139	—	43	9	226	124	—	0	165	—	—	—	—	—	—	—	—	706
80	107	114	51	42	106	350	0	—	—	25	—	—	—	—	—	—	—	—	688
81	134	147	—	0	106	346	58	—	—	28	—	—	—	—	—	—	—	—	685
82	114	114	—	52	—	58	161	114	0	184	—	—	—	0	—	—	—	—	683
83	73	101	—	—	61	387	47	—	—	67	—	—	—	—	—	—	—	—	663
84	15	170	64	105	42	212	—	—	—	—	45	0	—	—	10	14	—	—	662
	103	134	89	34	—	49	22	—	—	318	10	—	—	—	0	6	—	—	662
86	65	138	—	42	82	340	0	—	—	56	—	—	—	—	—	—	—	—	658
87	117	106	48	0	0	207	252	—	41	—	—	—	—	—	—	—	—	—	654
88	115	88	—	—	141	261	54	—	—	93	—	—	—	—	—	0	—	—	637
89	101	175	134	105	—	—	25	69	—	48	—	—	—	0	—	56	—	—	612
90	111	157	3	65	0	13	0	—	—	367	—	—	—	—	—	0	—	—	605
91	35	112	—	0	—	—	175	158	—	135	—	0	—	21	—	—	—	—	601
92	109	183	32	71	—	285	—	—	—	25	—	—	—	—	—	—	—	—	596
93	91	159	56	4	0	231	39	—	—	97	—	—	—	—	—	0	—	—	586

Open Competition of July 1878.—Table of Marks.—Candidates not selected—*continued.*

Order of Merit.	No. in Examination.	NUMBER OF MARKS OBTAINED.																	
		English			Greek.	Latin.	French.	German.	Italian.	Mathematics.	Natural Science.				Logic.	Political Economy	Sanskrit.	Arabic.	Total.
		Composition.	History.	Literature.							Chemistry.	Electricity and Magnetism.	Heat and Light.	Mechanical Philosophy and Astronomy.					
		Maximum Number of Marks.																	
		300	300	300	600	800	500	500	400	1,000	500	300	300	300	300	300	500	500	
94	71	167	26	47	—	63	119	46	—	106	—	—	—	—	—	8	—	—	582
95	17	98	—	—	13	264	77	—	0	111	—	—	—	0	—	—	—	—	563
96	48	114	0	0	100	332	—	0	—	12	—	—	—	—	—	—	—	—	558
97	121	131	12	8	8	115	1	—	—	266	—	—	—	—	—	—	0	—	541
98	41	166	0	—	74	241	0	—	—	59	—	—	—	—	—	—	—	—	540
99	76	141	26	39	63	205	59	—	—	—	—	—	—	—	—	0	—	—	533
100	51	97	55	14	48	175	142	—	0	—	—	—	—	—	—	0	—	—	531
101	93	109	48	68	—	35	—	—	—	170	69	—	—	23	—	0	—	—	522
102	19	173	0	0	32	311	0	—	—	1	—	—	—	—	—	0	—	—	517
	133	125	0	0	0	257	35	—	—	100	—	—	—	—	—	—	—	—	517
104	83	101	—	—	—	0	112	188	46	69	—	—	—	—	—	0	—	—	516
105	52	16	—	—	49	282	86	—	0	74	—	—	—	—	—	—	—	—	507
106	58	107	7	77	—	0	142	119	—	18	—	—	—	—	—	0	—	—	470
107	40	99	—	0	0	4	257	—	—	104	—	—	—	0	—	—	—	—	464
	136	55	0	19	—	—	—	—	—	211	179	—	0	—	—	—	—	—	464
109	113	94	0	54	—	—	—	—	—	277	—	0	—	0	0	0	—	—	425

Open Competition of July 1878.—Table of Marks.—Candidates not selected—*continued.*

Order of Merit.	No. in Examination.	NUMBER OF MARKS OBTAINED.																	
		English			Greek.	Latin.	French.	German.	Italian.	Mathematics.	Natural Science.				Logic.	Political Economy	Sanskrit.	Arabic.	Total.
		Composition.	History.	Literature.							Chemistry.	Electricity and Magnetism.	Heat and Light.	Mechanical Philosophy and Astronomy.					
		Maximum Number of Marks.																	
		300	300	300	600	800	500	500	400	1,000	500	300	300	300	300	300	500	500	
110	5	126	13	46	0	108	16	97	—	—	0	—	—	—	—	—	—	—	496
111	29	166	18	54	—	0	—	—	—	160	—	0	—	0	—	0	—	—	398
112	116	56	—	0	0	65	0	—	—	226	—	—	—	47	—	—	—	—	394
113	24	162	0	17	0	113	—	—	—	97	—	—	—	0	—	—	—	—	389
114	43	167	11	51	0	126	20	—	0	—	—	—	—	—	—	0	—	—	375
115	74	114	0	4	0	242	0	—	—	1	—	—	—	—	—	—	—	—	361
116	69	79	16	29	—	101	50	—	0	70	—	—	—	—	—	0	—	—	345
117	106	152	30	90	—	28	0	—	0	42	—	—	—	—	0	0	—	—	342
118	70	77	16	30	—	—	—	0	—	199	—	5	—	0	—	0	—	—	327
119	124	136	2	46	0	77	7	—	—	45	—	—	—	0	—	0	—	—	315
120	94	89	17	31	0	154	0	0	0	—	—	—	—	—	—	0	—	—	291
121	96	118	0	0	0	56	—	—	—	66	—	—	—	—	—	—	—	—	240
122	11	117	0	11	1	84	—	0	—	—	—	—	—	—	—	—	—	—	213
123	61	55	0	0	0	68	88	—	0	—	—	—	—	—	—	0	—	—	211
124	99	87	—	—	0	118	0	0	0	—	—	—	—	—	0	—	—	—	205
125	47	128	0	0	0	47	0	—	—	26	—	—	—	—	—	—	—	—	201

10404.

Open Competition of July 1878.—Table of Marks.—Candidates not selected—*continued*.

Order of Merit.	No. in Examination.	NUMBER OF MARKS OBTAINED.																	
		English			Greek.	Latin.	French.	German.	Italian.	Mathematics.	Natural Science.				Logic.	Political Economy	Sanskrit.	Arabic.	Total.
		Composition.	History.	Literature.							Chemistry.	Electricity and Magnetism.	Heat and Light.	Mechanical Philosophy and Astronomy.					
		Maximum Number of Marks.																	
		300	300	300	600	800	500	500	400	1,000	500	300	300	300	300	300	500	500	
126	137	126	0	0	—	0	—	—	—	64	—	0	—	0	—	—	—	—	190
127	89	53	24	0	0	85	24	0	0	—	—	—	—	—	—	0	—	—	186
128	25	105	16	0	0	29	0	—	0	—	—	—	—	—	—	—	—	—	150
129	68	—	—	—	0	44	33	—	—	39	—	—	—	—	—	—	—	—	116
130	138	29	—	—	—	0	0	—	0	66	—	—	—	0	—	—	—	—	95
131	92	70	0	0	0	0	—	—	—	24	0	—	—	0	—	—	—	—	94
132	122	85	0	0	—	0	0	—	—	—	—	—	—	—	—	0	—	—	85
133	81	48	0	0	—	0	35	—	0	—	—	—	—	—	—	—	—	—	83
134	80	55	0	0	—	18	7	0	0	—	—	—	—	—	—	—	—	—	80

CIVIL SERVICE COMMISSION.

CIVIL SERVICE OF INDIA.

EXAMINATION PAPERS

SET AT THE

OPEN COMPETITION

HELD UNDER THE DIRECTIONS OF THE CIVIL SERVICE COMMISSIONERS IN JUNE AND JULY 1879;

TOGETHER WITH

REGULATIONS AND TABLE OF MARKS.

LONDON:

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CIVIL SERVICE OF INDIA.

OPEN COMPETITION of JUNE and JULY 1879.

Regulations.

N.B.—The Regulations are liable to be altered in future years.

1. On June 17th, 1879, and following days, an Examination of Candidates will be held in London. At this Examination not fewer than Candidates will be selected, if so many shall be found duly qualified. Of these, will be selected for Presidency of Bengal, [for the Upper Provinces, and for the Lower Provinces,] for that of Madras, and for that of Bombay.* Notice will hereafter be given of the days and place of Examination.

2. Any person desirous of competing at this Examination, must produce to the Civil Service Commissioners, before the 1st of April, 1879, evidence showing:—

(*a*) That he is a natural-born subject of Her Majesty.

(*b*) That his age will be above seventeen years on the 1st of June, 1879, and under nineteen years on the 1st January, 1879.† [*N.B.—In the case of Natives of India this must be certified by the Government of India, or of the Presidency or Province in which the Candidate may have resided.*]

(*c*) That he has no disease, constitutional affection, or bodily infirmity unfitting him, or likely to unfit him, for the Civil Service of India.‡

(*d*) That he is of good moral character.‡

He must also pay such fee as the Secretary of State for India may prescribe.§

3. Should the evidence upon the above points be *primâ facie* satisfactory to the Civil Service Commissioners, the Candidate will, upon

---

* The number of appointments to be made, and the number in each Presidency, &c., will be announced hereafter.

[*It was afterwards announced that* 28 *Candidates would be selected,* 13 *for the Presidency of Bengal* (8 *for the North-West Provinces and* 7 *for the Lower Provinces*), 7 *for Madras, and* 6 *for Bombay*].

† At the Open Competition to be held in 1880, Candidates will be required to be above 17 on the 1st June, and under 19 on the 1st January, of that year. At subsequent competitions they will be required to be above 17 and under 19 on the 1st June of the year in which the competition is held.

‡ Evidence of health and character must bear date not earlier than the 1st March, 1879.

§ The Fee for this Examination will be £5, payable by means of a special stamp according to instructions which will be communicated to Candidates.

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payment of the prescribed fee, be admitted to the Examination. The Commissioners may, however, in their discretion, at any time prior to the grant of the Certificate of Qualification herein-after referred to, institute such further inquiries as they may deem necessary; and if the result of such inquiries, in the case of any Candidate, should be unsatisfactory to them in any of the above respects, he will be ineligible for admission to the Civil Service of India; and if already selected, will be removed from the position of a Probationer.

4. The Examination will take place only in the following branches of knowledge:—

	Marks.
*English Composition	300
†History of England—including a period selected by the Candidate	300
†English Literature—including books selected by the Candidate	300
Greek	600
Latin	800
French	500
German	500
Italian	400
*‡Mathematics (pure and mixed)	1,000
Natural Science: that is, the Elements of any two of the following Sciences, viz.:— Chemistry, 500; Electricity and Magnetism, 300; Experimental Laws of Heat and Light, 300; Mechanical Philosophy, with outlines of Astronomy, 300.	
Logic	300
Elements of Political Economy	300
§Sanskrit	500
§Arabic	500

Candidates are at liberty to name, before April 1st, 1879, any or all of these branches of knowledge. No subjects are obligatory.

5. The merit of the persons examined will be estimated by marks; and the number set opposite to each branch in the preceding regulation denotes the greatest number of marks that can be obtained in respect of it.

6. The marks assigned to Candidates in each branch will be subject to such deduction as the Civil Service Commissioners may deem necessary, in order to secure that "a Candidate be allowed no credit at all for taking up a subject in which he is a mere smatterer."*

---

* Marks assigned in English Composition and Mathematics will be subject to no deduction.

† A considerable portion of the marks for English History and Literature will be allotted to the work specially prepared. In awarding marks for this, regard will be had partly to the extent and importance of the periods or books selected, and partly to the thoroughness with which they have been studied.

‡ The Examination will range from Arithmetic, Algebra, and Elementary Geometry, up to the elements of the differential and integral calculus, including the lower portions of applied Mathematics.

§ The standard of marking in Sanskrit and Arabic will be determined with reference to a high degree of proficiency, such as may be expected to be reached by a Native of good education.

7. The Examination will be conducted by means of printed questions and written answers, and by *viva voce* Examination, as may be deemed necessary.

8. The marks obtained by each Candidate, in respect of each of the subjects in which he shall have been examined, will be added up, and the names of the * Candidates who shall have obtained a greater aggregate number of marks than any of the remaining Candidates will be set forth in order of merit, and such Candidates shall be deemed to be selected Candidates for the Civil Service of India, provided they appear to be in other respects duly qualified. Should any of the selected Candidates become disqualified, the Secretary of State for India will determine whether the vacancy thus created shall be filled up or not. In the former case, the Candidate next in order of merit, and in other respects duly qualified, shall be deemed to be a selected Candidate. A selected Candidate declining to accept the appointment which may be offered to him will be disqualified for any subsequent competition.

9. Selected Candidates, before proceeding to India, will be on probation for two years, during which time they will be examined periodically, with a view of testing their progress, in the following subjects:—†

	Marks.
1. Law	1,250
2. Classical Languages of India—	
Sanskrit	500
Arabic	400
Persian	400
3. Vernacular Languages of India (each)	400
4. The History and Geography of India	350
5. Political Economy	350

In these Examinations, as in the open competition, the merit of the Candidates examined will be estimated by marks, and the number set opposite to each subject denotes the greatest number of marks that can be obtained in respect of it at any one Examination. The Examination will be conducted by means of printed questions and written answers, and by *viva voce* Examination, as may be deemed necessary. The last of these Examinations will be held at the close of the second year of probation, and will be called the "Final Examination," at which it will be decided whether a selected Candidate is qualified for the Civil Service of India. At this Examination Candidates will be permitted to take up any one of the following branches of Natural Science, viz.—Botany, Geology, and Zoology, for which 350 marks will be allowed.

10. Any Candidate who, at any of the periodical Examinations, shall appear to have wilfully neglected his studies, or to be physically incapacitated for pursuing the prescribed course of training, will be liable to have his name removed from the list of selected Candidates.

11. The selected Candidates who, at the Final Examination, shall be found to have a competent knowledge of the subjects specified in Regulation 9, and who shall have satisfied the Civil Service Commissioners of their eligibility in respect of age, health, and character,

* Twenty-eight. *See* note * on page 3.

† Full instructions as to the course of study to be pursued will be issued to the successful Candidates as soon as possible after the result of the open competition is declared.

shall be certified by the said Commissioners to be entitled to be appointed to the Civil Service of India, provided they shall comply with the regulations in force at the time for that Service.

12. Applications from persons desirous to be admitted as Candidates are to be addressed to the "Secretary to the Civil Service Commissioners, London, S.W.," from whom the proper form for the purpose may be obtained.

October, 1878.

The Civil Service Commissioners are authorised by the Secretary of State for India in Council to make the following announcements :—

(1.) *Selected Candidates will be permitted to choose,* according to the order in which they stand in the list resulting from the open competition as long as a choice remains, the Presidency (and in Bengal the Division of the Presidency) to which they shall be appointed, but this choice will be subject to a different arrangement should the Secretary of State or the Government of India deem it necessary.*

(2.) *The Probationers, having passed the necessary Examinations, will be required to report themselves to their Government in India not later than the close of December*, 1882.

(3.) *The seniority in the Civil Service of India of the selected Candidates shall be determined according to the Order in which they stand on the list resulting from the Final Examination.*

(4.) *An allowance of* £150 *a year will be given during each of the two years of their probation to all Candidates who pass their probation at some University to be approved beforehand by the Secretary of State, provided such Candidates shall have passed the required Examinations to the satisfaction of the Civil Service Commissioners, and shall have complied with such rules as may be laid down for the guidance of selected Candidates.*

(5.) *All selected Candidates will be required, after having passed the second periodical Examination, to attend at the India Office for the purpose of entering into an agreement binding themselves, amongst other things, to refund in certain cases the amount of their allowance in the event of their failing to proceed to India. A surety will be required.*

(6.) *After passing the Final Examination, each Candidate will be required to attend again at the India Office, with the view of entering into covenants. The stamps payable on these documents amount to* £1.

(7.) *Candidates rejected at the Final Examination of* 1881 *will in no case be allowed to present themselves for re-examination.*

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* This choice must be exercised immediately after the result of the open competition is announced, on such day as may be fixed by the Civil Service Commissioners.

EXTRACT from ARRANGEMENTS for the OPEN COMPETITION of June and July 1879.

NOTICES.

On the first day of the Examination, Candidates will be required to state on a form which will be placed before them their addresses during the Examination, and they are requested thereafter to keep the Commissioners informed of all changes in their address until they have received the announcement of the result of the Examination.

The result of the Examination will be communicated by letter to each Candidate, probably about the end of July. The successful Candidates will be required to attend in London, *immediately after this announcement*, for the purpose of being medically examined, of exercising their choice of Presidency, and of receiving instructions as to the special studies to be pursued during their two years of probation.

Candidates will be required to leave their hats, overcoats, umbrellas, and any books or papers which they may have brought with them in the room provided for this purpose, before proceeding to the Examination Room.

The Examination on paper will in each case begin at the hour indicated in the following Time Table, but the door of the Examination Room will be kept open for half an hour afterwards, in order that Candidates may not suffer from accidental delays. . Candidates arriving after the expiration of that half hour will not be admitted.

No Candidate will be allowed to quit the Examination Room on any day until the expiration of half an hour from the time fixed for the commencement of the Examination.

The number in the margin (and *not* the name of the Candidate) must be placed outside each book sent in to the Examiners.

No Candidate who has left the Examination Room during the hours assigned to paper work will be permitted to return to the paper which he has quitted.

Candidates wishing for explanation of the meaning of any of the questions before them may apply to the Superintendent of the Examination Room. With this exception, perfect silence is to be preserved in the Examination Room; and any Candidate guilty of disorderly or improper conduct will be liable to be excluded from the Examination.

Any Candidate detected in the use of a book or manuscript brought with him for his assistance, or in copying from the papers of any other Candidate, or in giving or receiving assistance of any description, will be regarded as disqualified, and his name will be removed from the List.

N.B.—At this Examination 28 Candidates will be selected, if so many shall be found duly qualified. Of these, 7 will be selected for the Presidency of Bengal (including Burma and Assam), 8 for the North West Provinces, Punjab and Oudh, 6 for the Presidency of Bombay, and 7 for the Presidency of Madras. .

CIVIL SERVICE COMMISSION,
CANNON ROW, LONDON, S.W.,
May 1879.

CIVIL SERVICE OF INDIA.

OPEN COMPETITION OF JUNE AND JULY 1879.

TIME TABLE of the EXAMINATION on PAPER.

Place.	Day.	Hour.	Subject.
The Arena of the Royal Albert Hall, Kensington.	Tuesday, 17th June	10 A.M. to 1 P.M. 2 P.M. to 5 P.M.	Translation from Latin. Translation into Latin.
	Wednesday, 18th June	10 A.M. to 1 P.M. 2 P.M. to 5 P.M.	English Composition (1). English Composition (2).
	Thursday, 19th June	10 A.M. to 1 P.M. 2 P.M. to 5 P.M.	English Literature (1). English Literature (2).
	Friday, 20th June	10 A.M. to 1 P.M. 2 P.M. to 5 P.M.	English History (1). English History (2).
	Saturday, 21st June	10 A.M. to 1.30 P.M. 2.30 P.M. to 5.30 P.M.	French. Translation from Greek.
	Monday, 23rd June	10 A.M. to 1 P.M. 2 P.M. to 5 P.M.	Translation into Greek. Arithmetic and Algebra.
	Tuesday, 24th June	10 A.M. to 1 P.M. 2 P.M. to 5 P.M.	Geometry. Arabic (1). Pure Mathematics (1). Arabic (2).
	Wednesday, 25th June	10 A.M. to 1 P.M. 2 P.M. to 5 P.M.	Pure Mathematics (2). Pure and Mixed Mathematics: (Easy Problems).
	Thursday, 26th June	10 A.M. to 1 P.M. 2 P.M. to 5 P.M.	Statics and Dynamics. Mixed Mathematics (Higher).
The London University, Burlington Gardens.	Friday, 27th June	10 A.M. to 1 P.M. 2 P.M. to 5 P.M.	Practical Chemistry.
The Civil Service Commission, Cannon Row, Westminster.	Saturday, 28th June	10 A.M. to 1 P.M. 2 P.M. to 5 P.M.	Mechanical Philosophy. Chemistry (Paper).
	Monday, 30th June	10 A.M. to 1 P.M. 2 P.M. to 5.30 P.M.	Political Economy. German.
	Tuesday, 1st July	10 A.M. to 1 P.M. 2 P.M. to 5 P.M. 2 P.M. to 5.30 P.M.	Logic. Heat and Light. Italian.
	Wednesday, 2nd July	10 A.M. to 1 P.M. 2 P.M. to 5 P.M.	Electricity and Magnetism. Sanskrit (1). Sanskrit (2).

*** There will be vivâ voce Examinations in every subject (except English Composition).

Examination Papers.

ENGLISH COMPOSITION. (1.)

W. STEBBING, Esq.

Wednesday, 18th June 1879. 10 A.M. to 1 P.M.

Write an Essay on *one* of the following subjects:

1. Policy, expecting not clear gain,
Deals ever in alternatives.

2. There is no virtue like necessity.

3. The modern multiplication of books.

N.B.—*Candidates are desired to bear in mind that their exercises will be valued according to the quality rather than the quantity of what they write.*

ENGLISH COMPOSITION. (2.)

J. R. DASENT, Esq.

Wednesday, 18th June 1879. 2 P.M. to 5 P.M.

1. Construct sentences, exemplifying the right use of the following words:

Almoner; fain; largesse; pageant; sear; vouchsafe; burgess; casuistry; cabal; indict; irony; perfunctory; recoup; vicarious; welkin; and add brief notes on their etymology and history.

2. Paraphrase the following passages, and comment upon their language and meaning:

a. To sit on rocks, to muse o'er flood and fell,
To slowly trace the forest's shady scene,
Where things that own not man's dominion dwell,
And mortal foot hath ne'er or rarely been;
To climb the trackless mountain all unseen,
With the wild flock that never needs a fold;
Alone o'er steep and foaming falls to lean;
This is not solitude; 'tis but to hold
Converse with nature's charms, and view her stores unrolled.

But midst the crowd, the hum, the shock of men,
To hear, to see, to feel, and to possess,
And roam along, the world's tired denizen,
With none who bless us, none whom we can bless;
Minions of splendour shrinking from distress!
None that, with kindred consciousness endued,
If we were not, would seem to smile the less,
Of all that flattered, followed, sought, and sued;
This is to be alone; this, this is solitude!

CHILDE HAROLD.

b. Suspicions amongst thoughts are like bats amongst birds, they ever fly by twilight. Certainly they are to be repressed, or, at the least, well guarded: for they cloud the mind, they lose friends, and they check with business, whereby business cannot go on currently and constantly. They dispose kings to tyranny, husbands to jealousy, wise men to irresolution and melancholy. They are defects, not in the heart, but in the brain; as in the example of Henry the Seventh of England: there was not a more suspicious man nor a more stout. And in such a nature they do small hurt. For commonly they are not admitted but with examination; whether they be likely or no? But in fearful natures they gain ground too fast. There is nothing so makes a man suspect much, as to know little, and therefore men should remedy suspicion by procuring to know more, and not to keep their suspicions in smother.

BACON'S ESSAYS.

ENGLISH HISTORY. (1.)

T. ARNOLD, Esq.

Friday, 20th June 1879. 10 A.M. to 1 P.M.

N.B.—*Not more than* 8 *questions are to be answered.*

1. Trace the various inducements which led duke William to make his attempt on England, distinguishing between those which rested on legal and political grounds and those which were of a personal nature.

2. Give some account of the house of Anjou for fifty years before the accession of Henry II., and trace in brief outline its political fortunes during the hundred years which ensued.

3. Describe the condition of the English universities, with reference to the intellectual and moral influence which they diffused, about the time of Magna Charta.

4. What do you know of the siege of Orleans, Cade's insurrection, the Peace of Wedmore, Tyrone's rebellion, Oldcastle's plot, and the rout of Wigan lane?

5. Analyse the causes of the popular discontent which overshadowed the closing period of the reign of Edward III.

6. Examine,—with reference, 1. to legitimacy and constitutional law, 2. to the interest of the public good,—the claim of Richard duke of York to oust the Lancastrian family from the throne.

7. Give some account of the efforts of William of Wykeham and Henry VI. to promote education, of the labour of Caxton, and of the introduction into England of the study of Greek.

8. Explain the failure of the negotiations at Uxbridge in 1645. Who were the Levellers? and the Club men?
State the substance of the Declaration of Breda.

9. What circumstances rendered imperative the passing of the Act of Union in 1707? and on what occasions, in the course of the next forty years, was the arrangement then made endangered?

10. Give a historical sketch of the struggle between England and France for supremacy in India.

11. Survey the state of Europe at the commencement of Napoleon's Russian campaign, and name the powers whose combination finally broke up his empire.

ENGLISH HISTORY. (2.)

Rev. J. F. BRIGHT.

Friday, 20th June 1879. 2 P.M to 5 P.M.

[*Each Candidate is requested to name at the head of his paper the period which he has selected. No marks will be given for answers to questions not included in the stated period.*]

I.—(1154—1377.)

1. Illustrate from documents the ancient methods by which the national peace and defence were secured.

2. What light does the Assize of Clarendon throw upon the changes of the administration of justice introduced by Henry II.?

3. Give and explain the chief Statutes of Edward I. respecting the tenure or devise of land. State the objects for which they were passed, and the effects which they seem to have produced.

4. Trace the steps by which taxation under the Plantagenets became national and parliamentary.

5. In what various ways were armies raised in England during the twelfth, thirteenth, and fourteenth centuries?

6. Compare in their constitutional aspects the baronial insurrections in the reigns of Henry III. and Edward II.

7. Discuss the conduct of Edward I. with regard to Scotland, and the validity of his claims to suzerainty of that country.

8. Compare the opposition offered to the crown by the archbishops Winchelsey and Stratford.

II.—(1485—1603.)

1. What seem to have been Henry VII.'s views with regard to the position which England ought to occupy in Europe? How far do we find them carried out by his son?

2. "Buckingham's condemnation not only gratified the Cardinal's revenge, but answered a very constant purpose of the Tudor Government, that of intimidating the great families." Is such a purpose to be traced in the political executions of Henry VIII.'s reign?

3. How far had the Reformation advanced by the end of Henry VIII.'s reign?

4. Contrast the characteristics of the Reformation in England and Scotland.

5. Describe the social condition of England under Edward VI.

6. Discuss and illustrate the infringements of the constitution by the Tudor monarchs, (1) by means of proclamations, (2) by their interference with the ordinary course of justice.

7. Shew and explain the re-birth of the influence of the Commons during this period.

8. Trace Elizabeth's interference in the affairs of the Netherlands.

9. Show how Raleigh represented various leading tendencies of his age.

III.—(1603—1714.)

1. What opposition to the high prerogative doctrines adopted by James I. and his Council was made by the chief Common lawyers?

2. Compare Strafford's policy in Ireland with that of Cromwell.

3. What were the views of the different parties who concurred in establishing the Commonwealth? How far were any of these views realised?

4. Describe the origin and characteristics of the Courts suppressed by the Long Parliament during its first session.

5. Show how it was that the enthusiasm with which the Restoration was hailed rapidly changed to discontent.

6. How far was the idea of a Ministry developed in Charles II.'s reign? Describe Sir William Temple's scheme, and say why it failed.

7. What disputes on points of jurisdiction and privilege occurred between the two Houses in the reign of Charles II.?

8. Point out the resemblance and difference in the position of Charles II. and James II. with regard to France.

9. Trace the history of the emancipation of the press.

10. How did William III.'s European position affect his position as King of England?

IV.—(1714—1805.)

1. "A King without Monarchical splendour, a Council of nobles without aristocratical independency, a Council of Commons without democratical freedom." How far does this describe the constitution in George I.'s reign?

2. What were the circumstances under which the Septennial Act was introduced? Discuss the chief objections urged against it.

3. How would you explain the lukewarm conduct of all classes during the invasion of the Pretender in 1745?

4. Was there any justification for the frequently repeated charges brought against the two first Georges, that they were inclined to a Hanoverian policy?

5. What is meant by the term "King's friends?" Give facts to make your answer clear, and explain the object which George III. set before him at the beginning of his reign.

6. Examine the constitutional questions at issue between England and the American Colonists, and discuss Chatham's conduct with regard to them.

7. Criticize Pitt's chief financial measures.

8. Give the circumstances which led to Pitt's resignation in 1801.

9. Give the chief opinions held from time to time by the parties to which the names Whig and Tory were applied.

ENGLISH LITERATURE. (1.)

GENERAL PAPER.

[*Not more than* ten *questions are to be answered.*]

Rev. A. STOPFORD BROOKE.

Thursday, 19th June 1879. 10 A.M. to 1 P.M.

1. Show how English Literature grew and prevailed in Northumbria, and in the South, before the Conquest.

2. What were the chief works written in Transition English, and how did the new English grow up?

3. Sketch the progress of English Prose from Sir John Mandeville to Ascham.

4. What influence had the Reformation on the English Language and on English Literature?

5. Describe the plot of the Faery Queen, and mention any peculiarities which may occur to you in Spenser's English.

6. Say what you know of the *Euphues;* the *Arcadia; Tamburlaine; Colin Clout's come home again; Volpone the Fox;* the *Polyolbion.*

7. Arrange, as far as possible, the succession of Shakspere's plays, in connexion with his life.

8. Who wrote the *Hesperides*; the *Great Exemplar*; the *Holy and Profane State*; *Castara*; *The Purple Island*; the *Histrio mastix*? State what is the subject of each of them.

9. What influence had Defoe and Addison on English Prose, and what influence had Dryden and Pope on English Poetry?
Name the works of each which you consider the most influential.

10. *The Annus Mirabilis*; *The Drapiers Letters*; *The Rape of the Lock*; *The Excursion*; *The Traveller*; *The Vanity of Human Wishes*; *Letters on a Regicide Peace*; *Ode on the Passions*; *Rasselas*; *Adonais*; *Isabella*: name the writers of these works, give their dates, and describe the subject of each.

11. Who were the Poets most influenced by the French Revolution, and in what way did its theories tell upon them?

12. Describe the poetic style of Cowley, Byron, Scott, and Tennyson, and mention what you consider to be the greatest work of each.

ENGLISH LITERATURE. (2.)

Rev. G. W. KITCHIN.

Thursday, 19th June 1879. 2 P.M. to 5 P.M.

[N.B.—You are expected to confine your answers to those questions which relate to the works which you have selected. Your remarks should be illustrated by quotations from or distinct references to the passages on which they are founded, as credit will be given for any knowledge you may show, in proportion as it appears to be derived *at first hand from your own reading of the works.*]

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1. "There are parts of Macbeth which Shakespere did not write." Comment on this statement, and on the two theories (1) that the Play was the work of two contemporary authors, (2) that it was added to after Shakespere's death.

2. Analyse the characters of Cassio and Iago.

3. Why is the play of King Lear "essentially impossible to be represented on the stage?" Discuss the dramatic elements in the king's character.

4. Criticise the last scene in Hamlet.

5. What are the good points of Shakespere's treatment of classical subjects? Examine the question with special reference to Coriolanus and Julius Cæsar.

6. How far did Shakespere adhere to historical truth in his King John? Can you lay down any rules for the guidance of the artist in dealing with the truth or the arrangement of facts in his composition?

7. What is the duty of the Chorus in Henry V.? Cite any well-known passages from the choric parts of this play.

8. Are Shakespere's women better drawn than his men? Consider the question by the light of the characters in the Tempest, *or* the Merchant of Venice, *or* Romeo and Juliet, *or* As You Like It.

9. What are the chief canons of Tragedy? Examine, with reference to any *one* of the plays you have selected, how far Shakespere conforms to those canons.

10. Write notes on the following passages, in connexion with the context in which they occur:

    (1.) Child Rowland to the dark tower came.

    (2.) There's fennel for you, and columbines: there's rue for you; and here's some for me: we may call it herb of grace o' Sundays: O, you must wear your rue with a difference. There's a daisy.

    (3.) The still-vexed Bermoothes.

    (4.) This Tunis, Sir, was Carthage.

    (5.) Unto the tranect, to the common ferry which trades to Venice.

    (6.) The enchanted herbs that did renew old Æson.

    (7.) I was never so be-rhymed since Pythagoras' time.

    (8.) You must borrow me Garagantua's mouth first.

    (9.) Truly, my name is Cinna.
    Tear him to pieces, he's a conspirator.
    I am Cinna the poet . . . .

    (10.) Withal,
    A woman well reputed: Cato's daughter.

    (11.) Arise, Sir Richard and Plantagenet.

11. The Canterbury Tales have been styled "a great dramatic poem." Discuss the meaning of the phrase, and show whether it can be rightly applied to them.

12. What can you gather from Chaucer as to the condition of the working man in his day? Does he differ much in this point from the author of Piers Ploughman?

13. Show, with examples, how largely astrology enters into Chaucer's poetry, and consider its connexion with classical antiquity in Chaucer's hands.

14. In what respects is the Paradise Lost distinctly superior to the Paradise Regained? How do you account for the difference?

15. Discuss the following passages from Milton:—

    (1.) In dim eclipse disastrous twilight sheds
    On half the nations, and with fear of change
    Perplexes monarchs.

(2.) By equinoctial winds
Close sailing from Bengala or the isles
Of Ternate and Tidore, whence merchants bring
Their spicy drugs.

(3.) Orcus and Ades and the dreaded name
Of Demogorgon ; Rumor next, and Chance.

(4.) O foolishness of men ! that lend their ears
To those budge doctors of the Stoic fur,
And fetch their precepts from the Cynic tub.

16. Write a criticism on either (1.) The songs in Comus ; or (2.) The choruses in Samson Agonistes.

17. "The longest chapter in Deuteronomy has not curses enough for an Anti-Bromingham." Explain this passage, and show what position Dryden aimed at taking up in his Absalom and Achitophel.

18. Explain the following allusions:—(1.) "The charming Annabel;" (2.) "Amnon's murder;" (3.) "Savoury deities;" (4.) "The triple bond he broke;" (5.) "As old, to my knowledge, as the times of Boccace and Chaucer;" (6.) "The bristled baptist Boar, impure as he;" (7.) "Sour monsters breed in fenny Holland."

19. Describe Dryden's Wolf, and account for the vehemence with which he draws the character.

20. How far does Pope translate, and how far imitate only, in his Satires ? Illustrate from any one of his Satires.

21. Discuss the view of literary patronage taken by Pope, and compare it with that of Dr. Johnson. To what causes would you attribute the decay of the older system of patronage ?

22. What, in your judgment, would have been Gray's place among poets had the "Elegy in a Country Churchyard" not been written ? Criticise, in support of your opinion, some one of his other pieces.

23. "I do now publish my Essays; which, of all my other works, have been most current." *Bacon.* Give some account of the structure of the work and of its popularity; and show that the age of James I. was specially favourable to aphoristic literature.

24. Give a sketch, with remarks bearing on it, of *one* of the following Essays of Bacon: (1.) Of Great Place; (2.) Of Nobility; (3.) Of Superstition ; (4.) Of Plantations.

25. Explain and comment on the following passages from Bacon's Advancement of Learning:

(1.) Having his picture in his gallery matched with Apollonius.

(2.) Constantine the Great was wont to call him *Parietaria.*

(3.) These Relations which the Italians make touching Conclaves.

(4.) Where he found it written of St. Paul *Demissus est per sportam*, mended his book and made it *Demissus est per portam.*

26. Give the substance of the remarks made in the Advancement of Learning under the following heads:

(1.) The greatest error of all the rest is the mistaking or misplacing of the last or furthest end of knowledge.

(2.) The wisdom of conversation ought not to be over much affected, but much less despised.

27. Comment on the style of the Areopagitica. Show by illustration wherein the chief merits of the work lie.

28. What does Milton say as to the probable result of the licensing system on the literature of clerical circles? What as to the "philosophic freedom" enjoyed by England?

29. What are the principal defects in the use of the reasoning powers which Locke notices in his Conduct of the Understanding? How far does he think they may be remedied by the use of Logic?

30. What does Locke mean by asserting that all opinions should be matters of indifferency to us?

31. What are the chief excellences of Clarendon as a writer? Illustrate from his account of Lord Essex, *or* of the Battle of Lansdown.

32. Trace from Defoe's Memoirs of a Cavalier the views as to the management of the cause of Charles I. which prevailed in his day. What may be said to have been the scope which Defoe had before him in the latter part of the work?

33. How far is it correct to say that the Coverley Papers are a first attempt at an English novel? Can you trace the influence of them on any later authors?

34. Estimate the value of *either* Addison's criticism on Milton *or* of Dr. Johnson's.

35. What reasons does Dr. Johnson assign for the success of Addison's Cato, and how far are the reasons valid?

36. With what aim did Dr. Johnson undertake the examination of Pope's epitaphs? What is his criticism on the epitaph intended for Sir Isaac Newton? Is it true to say that the eighteenth century was the classic age of epitaph-writing, in both Latin and English?

37. What general impression can be gathered from Dr. Johnson's criticism of Dryden's plays? What reasons are there for and against believing that the Rehearsal was aimed at Dryden?

38. Describe the political position taken up by Burke (1) in his speech on American Taxation, *or* (2) in his Reflexions on the French Revolution.

39. Give some account of the Navigation Act, and of its influence on the disputes with America, as alluded to by Burke.

40. What was Burke's opinion as to the States General of 1789, and especially as to the triumph in them of the Third Estate?

41. How does Macaulay describe the "great literary revolution" of Byron's days?

42. Give an account of Macaulay's treatment of Sir William Temple's position with reference to parties in Holland and factions in England. How did the Court treat Sir William after the conclusion of the Triple Alliance?

43. Consider Macaulay's account of Shaftesbury, and compare it with the descriptions of him to be found in Hudibras and in the Absalom and Achitophel.

44. Give some account, with examples, of Madame D'Arblay's earlier and later styles, and show what were the causes of the great difference between them.

TRANSLATION FROM GREEK.

Very Rev. Dean MERIVALE.

Saturday, 21st June 1879. 2 P.M. to 5 P.M.

Three only of the following passages are to be translated.

Ἔστι δὲ καὶ ἄλλος λόγος ἔχων ὧδε, τῷ μάλιστα λεγομένῳ αὐτὸς πρόσκειμαι. Σκύθας τοὺς νομάδας οἰκέοντας ἐν τῇ Ἀσίῃ, πολέμῳ πιεσθέντας ὑπὸ Μασσαγετέων, οἴχεσθαι διαβάντας ποταμὸν Ἀράξεα ἐπὶ γῆν τὴν Κιμμερίην· τὴν γὰρ νῦν νέμονται Σκύθαι αὖτη λέγεται τὸ παλαιὸν εἶναι Κιμμερίων. τοὺς δὲ Κιμμερίους, ἐπιόντων Σκυθέων, βουλεύεσθαι, ὡς στρατοῦ ἐπιόντος μεγάλου· καὶ δὴ τὰς γνώμας σφέων κεχωρισμένας, ἐντόνους μὲν ἀμφοτέρας, ἀμείνω δὲ τὴν τῶν βασιλέων· τὴν μὲν γὰρ δὴ τοῦ δήμου φέρειν γνώμην, ὡς ἀπαλλάσσεσθαι πρῆγμα εἴη, μηδὲ πρὸς πολλοὺς δεόμενον κινδυνεύειν· τὴν δὲ τῶν βασιλέων, διαμάχεσθαι περὶ τῆς χώρης τοῖσι ἐπιοῦσι. οὔκων δὴ ἐθέλειν πείθεσθαι οὔτε τοῖσι βασιλεῦσι τὸν δῆμον, οὔτε τῷ δήμῳ τοὺς βασιλέας. τοὺς μὲν δὴ ἀπαλλάσσεσθαι βουλεύεσθαι ἀμαχητὶ τὴν χώρην παραδόντας τοῖσι ἐπιοῦσι· τοῖσι δὲ βασιλεῦσι δόξαι ἐν τῇ ἐωυτῶν κέεσθαι ἀποθανόντας, μηδὲ συμφεύγειν τῷ δήμῳ· λογισαμένους ὅσα τε ἀγαθὰ πεπόνθασι, καὶ ὅσα φεύγοντας ἐκ τῆς πατρίδος κακὰ ἐπίδοξα καταλαμβάνει. ὡς δὲ δόξαι σφι ταῦτα, διαστάντας, καὶ ἀριθμὸν ἴσους γενομένους, μάχεσθαι πρὸς ἀλλήλους· καὶ τοὺς μεν ἀποθανόντας πάντας ὑπ' ἐωυτῶν θάψαι τὸν δῆμον τῶν Κιμμερίων παρὰ ποταμὸν Τύρην· καί σφεων ἔτι δῆλός ἐστι ὁ τάφος. θάψαντας δὲ οὕτω τὴν ἔξοδον ἐκ τῆς χώρης ποιέεσθαι· Σκύθας δὲ ἐπελθόντας λαβεῖν ἐρήμην τὴν χώρην.

HERODOTUS.

1. Describe the geographical position of the Massagetæ, the Cimmerii, and the Scythæ, as far as you gather it from Herodotus.

2. Draw a map of the course of the Tyres and other rivers mentioned by Herodotus which fall into the Pontus Euxinus.

Νῦν οὖν, ὦ ἄνδρες Ἀθηναῖοι, πολλοῦ δέω ἐγὼ ὑπὲρ ἐμαυτοῦ ἀπολογεῖσθαι, ὡς τις ἂν οἴοιτο, ἀλλ' ὑπὲρ ὑμῶν, μή τι ἐξαμάρτητε περὶ τὴν τοῦ θεοῦ δόσιν ὑμῖν ἐμοῦ καταψηφισάμενοι· ἐὰν γὰρ ἐμὲ ἀποκτείνητε, οὐ ῥᾳδίως ἄλλον τοιοῦτον εὑρήσετε, ἀτεχνῶς, εἰ καὶ γελοιότερον εἰπεῖν, προσκείμενον τῇ πόλει ὑπὸ τοῦ θεοῦ, ὥσπερ ἵππῳ μεγάλῳ μὲν καὶ γενναίῳ, ὑπὸ μεγέθους δὲ νωθεστέρῳ καὶ δεομένῳ ἐγείρεσθαι ὑπὸ μύωπός τινος· οἷον δή μοι δοκεῖ ὁ θεὸς ἐμὲ τῇ πόλει προστεθεικέναι τοιοῦτόν τινα, ὃς ὑμᾶς ἐγείρων καὶ πείθων καὶ ὀνειδίζων ἕνα ἕκαστον οὐδὲν παύομαι τὴν ἡμέραν ὅλην πανταχοῦ προσκαθίζων. τοιοῦτος οὖν ἄλλος οὐ ῥᾳδίως ὑμῖν γενήσεται, ὦ ἄνδρες, ἀλλ' ἐὰν ἐμοὶ πείθησθε, φείσεσθέ μου· ὑμεῖς δ' ἴσως τάχ' ἂν ἀχθόμενοι, ὥσπερ οἱ νυστάζοντες ἐγειρόμενοι, ὀρούσαντες ἄν με, πειθόμενοι Ἀνύτῳ, ῥᾳδίως ἂν ἀποκτείναιτε, εἶτα τὸν λοιπὸν βίον καθεύδοντες διατελοῖτ' ἄν, εἰ μή τινα ἄλλον ὁ θεὸς ὑμῖν ἐπιπέμψειε κηδόμενος ὑμῶν. ὅτι δ' ἐγὼ τυγχάνω ὢν τοιοῦτος, οἷος ὑπὸ τοῦ θεοῦ τῇ πόλει δεδόσθαι, ἐνθενδε ἂν κατανοήσαιτε· οὐ γὰρ ἀνθρωπίνῳ ἔοικε τὸ ἐμὲ τῶν μὲν ἐμαυτοῦ ἀπάντων ἠμεληκέναι καὶ ἀνέχεσθαι τῶν οἰκείων ἀμελουμένων τοσαῦτα ἤδη ἔτη, τὸ δὲ ὑμέτερον πράττειν αἰεί, ἰδίᾳ ἑκάστῳ προσιόντα ὥσπερ πατέρα ἢ ἀδελφὸν πρεσβύτερον, πείθοντα ἐπιμελεῖσθαι ἀρετῆς.

PLATO.

3. What were the charges on which Socrates was condemned? How is his teaching traduced by Aristophanes?

4. Give an account of his last days and of his death, with the date.

Χερσί γε μὲν σάκος εἶλε παναίολον, οὐδέ τις αὐτὸ
Οὔτ' ἔῤῥηξε βαλὼν οὔτ' ἔθλασε, θαῦμα ἰδέσθαι.
Πᾶν μὲν γὰρ κύκλῳ τιτάνῳ λευκῷ τ' ἐλέφαντι
Ἠλέκτρῳ θ' ὑπολαμπὲς ἔην χρυσῷ τε φαεινῷ
Λαμπόμενον, κυάνου δὲ διὰ πτύχες ἠλήλαντο.
Ἐν μέσσῳ δὲ δράκοντος ἔην φόβος οὔτι φατειός,
Ἔμπαλιν ὄσσοισιν πυρὶ λαμπομένοισι δεδορκώς·

Τοῦ καὶ ὀδόντων μὲν πλῆτο στόμα λευκὰ θεόντων,
Δεινῶν, ἀπλήτων, ἐπὶ δὲ βλοσυροῖο μετώπου
Δεινὴ Ἔρις πεπότητο κορύσσουσα κλόνον ἀνδρῶν,
Σχετλίη, ἥ ῥα νόον τε καὶ ἐκ φρένας αἶνυτο φωτῶν,
Οἵτινες ἀντιβίην πόλεμον Διὸς υἷϊ φέροιεν.
Τῶν καὶ ψυχαὶ μὲν χθόνα δύνουσ' Ἄϊδος εἴσω
Αὐτῶν, ὀστέα δέ σφι περὶ ῥινοῖο σαπείσης
Σειρίου ἀζαλέοιο κελαινῇ πύθεται αἴῃ.
Ἐν δὲ Προΐωξίς τε Παλίωξίς τε τέτυκτο,
Ἐν δ' Ὁμαδός τε Φόβος τ' Ἀνδροκτασίη τε δεδῄει.

HESIOD.

5. Derive the words ἠλήλαντο, πεπότητο, ἀνδροκτασίη, δεδῄει, προΐωξίς, παλίωξις.

6. Compare the shield of Hercules in Hesiod with the shield of Achilles in Homer.

Νῆσός τις ἐστὶ πρόσθε Σαλαμῖνος τόπων,
Βαιὰ, δύσορμος ναυσὶν, ἣν ὁ φιλόχορος
Πὰν ἐμβατεύει, ποντίας ἀκτῆς ἔπι.
Ἐνταῦθα πέμπει τούσδ', ὅπως ὅτ' ἐκ νεῶν
Φθαρέντες ἐχθροὶ νῆσον ἐκσωζοίατο,
Κτείνειαν εὐχείρωτον Ἑλλήνων στρατὸν,
Φίλους δ' ὑπεκσώζοιεν ἐναλίων πόρων·
Κακῶς τὸ μέλλον ἱστορῶν. ὡς γὰρ θεὸς
Ναῶν ἔδωκε κῦδος Ἕλλησιν μάχης,
Αὐθημερὸν φράξαντες εὐχάλκοις δέμας
Ὅπλοισι ναῶν ἐξέθρωσκον· ἀμφὶ δὲ
Κυκλοῦντο πᾶσαν νῆσον, ὥστ' ἀμηχανεῖν
Ὅποι τράποιντο. πολλὰ μὲν γὰρ ἐκ χερῶν
Πέτροισιν ἠράσσοντο, τοξικῆς τ' ἀπὸ
Θώμιγγος ἰοὶ προσπίτνοντες ὤλλυσαν·
Τέλος δ' ἐφορμηθέντες ἐξ ἑνὸς ῥόθου
Παίουσι, κρεοκοποῦσι δυστήνων μέλη,
Ἕως ἁπάντων ἐξαπέφθειραν βίον.

ÆSCHYLUS.

7. Define the metre of these lines.

8. Give a list of the Greek metrical feet of two and of three syllables.

9. "Very few lines occur in the Tragic writers such as:

"Ατλας ὁ χαλκέοισι νώτοις οὐρανον."

(Porson, note on Hecuba, 343.)

Explain and illustrate the metrical canon which Porson has deduced from this remark.

TRANSLATION INTO GREEK.

S. H. BURBURY, Esq.

Monday, 23rd June 1879. 10 A.M. to 1 P.M.

I.—*Translate into Greek:*

The sea being the element where we might most probably carry on the war with any advantage to ourselves, it was agreed that we should bear five-eighths of the charge in that service, and the Dutch the other three; and by the grand alliance, whatever we or Holland should conquer in the Spanish West Indies, was to accrue to the conquerors. It might therefore have been hoped that this maritime ally of ours would have made up in their fleet what they fell short in their army; but quite otherwise, they never once furnished their quota either of ships or men; or if some few of their fleet now and then appeared, it was no more than appearing; for they immediately separated, to look to their merchants and protect their trade. And we may remember very well, when these guarantees of our succession, after having not one ship for many months together in the Mediterranean, sent that part of their quota thither, and furnished nothing to us, at the same time that they alarmed us with the rumour of an invasion. And last year when Sir James Wishart was dispatched into Holland to expostulate with the States, and to desire they would make good their agreements, he met with such a reception as ill became a republic to give that were under so many great obligations to us; in short, such a one, as those only deserve who are content to take it.

SWIFT.—*On the conduct of the Allies.*

Or this,

The king was at first in some apprehension that such a conflux of persons together of the parliament, who would look to enjoy the privileges of it in their debates, might, instead of doing him service, do many things contrary to it; and exceedingly apprehended that they would immediately enter upon some treaty of peace which would have no effect, yet whilst it was in suspense, would hinder his preparations for the war: and though nobody more desired peace, yet he had no mind that a multitude should be consulted upon the conditions of it: imagining that things of the greatest importance, as the giving up of persons, and other particulars of honour, would not seem to them of moment enough to continue a war in the kingdom; which would have been true, if, as hath been said before, the governors of the parliament had not themselves been too fearful of a peace, to trust any one to make politic propositions, which, upon refusal, might have done good, but being consented to had undone them, and frustrated all their designs.

CLARENDON.—*History of the Rebellion.*

II.—*Translate into Greek Iambics:*

The common cry
Will as 't is ever wont affix the blame
Unto the party injured, but the truth
Shall in the vengeance it dispenseth, find
A faithful witness. Thou shalt leave each thing
Beloved most dearly. This is the first shaft
Shot from the bow of exile. Thou shalt prove
How salt the savour is of others' bread,
How hard the passage to descend and climb
By others' stairs. But that shall gall thee most
Will be the worthless and vile company
With whom thou must be thrown into these straits.
For all ungrateful, impious all, and mad
Shall turn against thee; but in a little while
Theirs, and not thine, shall be the crimson'd brow.
Their course shall so evince their brutishness,
To have ta'en thy stand apart shall well become thee.

CARY'S DANTE.—*Paradise, Canto XVII.*

TRANSLATION FROM LATIN.

Professor W. Y. SELLAR.

Tuesday, 17th June 1879. 10 A.M. to 1 P.M.

[*Three only of the following passages are to be translated. Credit will be given for the* style *of the translation.*]

Translate into English:

Quid *legem Liciniam excitavit de quingentis jugeribus*, nisi ingens cupido agros continuandi? Quid *legem Cinciam de donis et muneribus*, nisi quia vectigalis jam et stipendiaria plebes esse senatui cœperat? Itaque minime mirum est, nec *Oppiam* nec aliam ullam tum legem desideratam esse, quæ modum sumptibus mulierum faceret, quum aurum et purpuram data et oblata ultro non accipiebant. *Si nunc cum illis donis Cineas urbem circumiret*, stantes in publico invenisset, quæ acciperent. Atque ego nonnullarum cupiditatum nec causam quidem aut rationem inire possum. Nam ut, quod alii liceat, tibi non licere, aliquid fortasse naturalis aut pudoris aut indignationis habeat; sic, æquato omnium cultu, quid unaquæque vestrum veretur, ne in se conspiciatur? Pessimus quidem est pudor vel parsimoniæ vel paupertatis: sed utrumque lex vobis demit, quum id, quod habere non licet, non habetis. Hanc, inquit, ipsam exæquationem non fero, illa locuples. Cur non insignis auro et purpura conspicior? cur paupertas aliarum sub hac legis specie latet, ut, quod habere non possunt, habituræ fuisse, si liceret, videantur? Vultis hoc certamen uxoribus vestris injicere, Quirites, ut divites id habere velint, quod nulla alia possit; pauperes, ne ob hoc ipsum contemnantur, supra vires se extendant? Næ, simul pudere, quod non oportet, cœperit; quod oportet, non pudebit. Quæ de suo poterit, parabit: quæ non poterit, virum rogabit. Miserum illum virum, et qui

exoratus, et qui non exoratus erit! quum, quod ipse non dederit, datum ab alio videbit. Nunc vulgo alienos viros rogant, et, quod majus est, legem et suffragia rogant, et a quibusdam impetrant, adversus te et rem tuam et liberos tuos inexorabiles.

LIVY.

Explain the historical allusions contained in the words italicised.

Jam nostra municipia conjunctione etiam vicinitatis vehementer moventur. Omnia, quæ dico de Plancio, dico expertus in nobis. Sumus enim finitimi Atinatibus. Laudanda est, vel etiam amanda vicinitas, retinens veterem illum officii morem, non infuscata malevolentia, non assueta mendaciis, non fucata, non fallax, non erudita artificio simulationis vel suburbano, vel etiam urbano. Nemo Arpinas non Plancio studuit, nemo Soranus, nemo Casinas, nemo Aquinas. Totus ille tractus celeberrimus, Venafranus, Allifanus, tota denique nostra illa aspera, et montuosa, et fidelis, et simplex, et fautrix suorum regio, se hujus honore ornari, se augeri dignitate, arbitrabatur: isdemque nunc a municipiis adsunt equites Romani publice et cum legationis testimonio, nec minore nunc sunt sollicitudine, quam tum erant studio. Etenim est gravius spoliari fortunis quam non augeri dignitate. Ergo ut alia in te erant illustriora, Laterensis, quæ tibi majores tui reliquerant, sic te Plancius hoc non solum municipii, verum etiam vicinitatis genere vincebat. Nisi forte te Labicana aut Gabina aut Bovillana vicinitas adjuvabat: quibus e municipiis vix jam qui carnem Latinis petant reperiuntur. Adjungam, si vis, id quod tu etiam huic obesse putas, patrem publicanum: qui ordo quanto adjumento sit in honore, quis nescit? Flos enim equitum Romanorum, ornamentum civitatis, firmamentum reipublicæ publicanorum ordine continetur.

CICERO.

Write short notes on the following words and phrases:—*municipia, officii, Arpinas, Venafranus, Gabina, qui carnem Latinis petant, publicanum.*

Græcia capta ferum victorem cepit, et artes
Intulit agresti Latio; sic horridus ille
Defluxit numerus Saturnius, et grave virus
Munditiæ pepulere; sed in longum tamen ævum
Manserunt hodieque manent vestigia ruris.
Serus enim Græcis admovit acumina chartis,
Et post Punica bella quietus quærere cœpit,
Quid Sophocles eo Thespis et Æschylus utile ferrent.
Tentavit quoque rem, si digne vertere posset,
Et placuit sibi, natura sublimis et acer;
Nam spirat tragicum satis et feliciter audet,
Sed turpem putat inscite metuitque lituram.
Creditur, ex medio quia res arcessit, habere
Sudoris minimum, sed habet comœdia tanto
Plus oneris, quanto veniæ minus. Adspice, Plautus
Quo pacto partes tutetur amantis ephebi,
Ut patris attenti, lenonis ut insidiosi;
Quantus sit Dossenus edacibus in parasitis,
Quam non adstricto percurrat pulpita socco;
Gestit enim nummum in loculos demittere, post hoc
Securus, cadat, an recto stet fabula talo.

Quem tulit ad scenam ventoso Gloria curru,
Exanimat lentus spectator, sedulus inflat:
Sic leve, sic parvum est, animum quod laudis avarum
Subruit aut reficit. Valeat res ludicra, si me
Palma negata macrum, donata reducit opimum.

HORACE.

Discuss briefly the literary questions suggested by this passage.

Antipho—Edepol vos lepide tentavi, vestrumque ingenium ingeni.
Sed hoc est, quod ad vos venio, quodque esse ambas conventas volo:
Mi auctores ita sunt amici, ut vos hinc abducam domum.

Panegyris—At enim nos, quarum res agitur, aliter auctores sumus:
Nam aut olim, nisi tibi placebant, non datas oportuit;
Aut nunc non æquom est abduci, pater, illisce absentibus.

An. Vosne ego patiar cum mendicis nuptas me vivo viris?

Pinacium—Placet ille meus mihi mendicus; suus rex reginæ placet.
Idem animust in paupertate, qui olim in divitiis fuit.

An. Vos latrones et mendicos homines magni penditis?

Pa. Non me tu argento dedisti, opinor, nuptum, sed viro.

An. Quid? illos exspectatis, qui abhinc jam abierunt triennium?
Quin vos capitis conditionem ex pessuma primariam?

Pi. Stultitia est, pater, venatum ducere invitas canes.
Hostis est uxor, invita quæ ad virum nuptum datur.

An. Certumne est, neutram vostrarum persequi imperium patris?

Pa. Persequimur: nam, quo dedisti nuptum, abire nolumus.

An. Bene valete: ibo atque amicis vostra consilia eloquar.

Pi. Probiores, credo, arbitrabunt, si probis narraveris.

An. Curate igitur familiarem rem, ut potestis, optume.

Pa. Nunc places, quum recte monstras: nunc tibi auscultabimus.
Nunc, soror, abeamus intro.

Pi. Imo intervisam prius domum.
Si a viro tibi forte veniet nuntius, facito ut sciam.

Pa. Neque ego te celabo, neque tu me celassis, quod scias.
Eho, Crocotium, i, parasitum Gelasimum huc accersito;
Tecum adduce: nam illum ecastor mittere ad portum volo,
Si quæ forte ex Asia navis heri eo aut hodie venerit.
Nam dies totos apud portum servos unus adsidet;
Sed tamen volo intervisi. Propera, atque actutum redi.

PLAUTUS.

Point out and comment on any peculiarities of language or construction in this passage.

TRANSLATION INTO LATIN.

S. H. BURBURY, Esq.

Tuesday, 17th June 1879. 2 P.M. to 5 P.M.

I.—*Translate into Latin:—*

Cromwell, like so many other usurpers, felt his position too precarious, or his vanity ungratified, without the name which mankind have agreed to worship. He had long since aspired to this titular as well as to the real pre-eminence, and the banished King's friends had contemplated the probability of his obtaining it without dismay. Affectionate towards his family, he wished to assure the stability of his son's succession, and perhaps to please the vanity of his daughters. It was indeed a very reasonable object with one who had already advanced so far. His assumption of the crown was desirable to many different classes; to the lawyers who, besides their regard for the ancient constitution, knew that an ancient statute would protect those who served a de facto King in case of a restoration of the exiled family; to the nobility, who perceived that their legislative right must immediately revive; to the people, who hoped for any settlement that would put an end to perpetual changes; to all of every rank and profession, who dreaded the continuance of military despotism, and demanded only the just rights and privileges of their country. A King of England could succeed only to a bounded prerogative, and must govern by the known laws; a protector, as the nation had felt, with less nominal authority, had all that the sword could confer.

HALLAM.

Or this,

Pyrrhus resolved to attack Curius before his colleague joined him, and he planned an attack upon his camp by night. He set out by torch-light, with the flower of his soldiers and the best of his elephants; but the way was long, and the country overgrown with wood and intersected with steep ravines, so that the progress was slow, and at last the lights were burnt out, and the men were continually missing their way. Day broke before they reached their destination, but still the enemy were not aware of their approach till they had surmounted the heights above the Roman camp, and were descending to attack it from the vantage ground. Then Curius led out his troops to oppose them; and the nature of the ground gave the Romans a great advantage over the heavy-armed Greek infantry, as soon as the attempt to surprise had failed. But the action seems to have been decided by an accident; for one of Pyrrhus' elephants was wounded, and running wild among its own men, threw them into disorder; nor could they offer a long resistance, being almost exhausted with the fatigue of their night-march. They were repulsed with loss; two elephants were killed, and eight, being forced into impracticable ground from which there was no outlet, were surrendered to the Romans.

ARNOLD.

II.—*For Latin Hexameters:*

For when before him comes the ill-fated soul,
It all confesses; and the judge severe
Of sin, considering what place in hell
Suit the transgression, with his tail so oft
Himself encircles, as degrees beneath
He dooms it to descend. Before him stand
Always a numerous throng; and in his turn
Each one to judgment passing speaks, and hears
His fate, thence downward to his dwelling hurled.
" O thou who to this residence of woe
" Approachest," when he saw me coming, cried
Minos, relinquishing his dread employ,
" Look how thou enter here; beware in whom
" Thou place thy trust; let not the entrance broad
" Deceive thee to thy harm." To whom my guide
" Wherefore exclaimest? Hinder not his way
" By destiny appointed: so 't is willed
" Where will and power are one. Ask thou no more."

CARY'S DANTE. Inferno.—Canto V.

Or this,

III.—*For Latin Lyrics:*

Had I a cave on some wild distant shore,
Where the winds howl to the waves' dashing roar,
There would I weep my woes,
There seek my lost repose,
Till grief my eyes should close
Ne'er to wake more.

Falsest of womankind, canst thou declare
All thy fond plighted vows—fleeting as air!
To thy new lover hie,
Laugh o'er thy perjury,
Then in thy bosom try
What peace is there!

BURNS.

FRENCH.

MATTHEW ARNOLD, Esq., and A. J. BUTLER, Esq.

Monday, 30th June 1879. 2 P.M. to 5.30 P.M.

(Including the time occupied in Dictation.)

PART I.

I. *Translate into English:*

Est-il rien de plus bizarre que ma destinée! fils de je ne sais pas qui; volé par des bandits; élevé dans leurs mœurs, je m'en dégoute et veux *courir* une carrière honnête; et partout je suis repoussé! J'apprends la chimie, la pharmacie, la chirurgie; et tout le crédit d'un grand seigneur peut à peine me mettre à la main une lancette vétérinaire!

Las d'attrister les bêtes malades, et pour faire un métier contraire, je me *jette* à corps perdu dans le théâtre; me *fussé*-je mis une pierre au cou! Je broche une comédie dans les mœurs du sérail; auteur espagnol, je crois pouvoir y fronder Mahomet, sans scrupule: à l'instant, un envoyé, de je ne sais où, se plaint que j'offense dans mes vers la Sublime-Porte, la Perse, une partie de la presqu'île de l'Inde, toute l'Egypte, les royaumes de Barca, de Tripoli, de Tunis, d'Alger et de Maroc; et voilà ma comédie flambée, pour plaire aux princes mahométans, *dont* pas un, je crois, ne sait lire, et qui nous meurtrissent l'omoplate, en nous disant: "Chiens de chrétiens!" Ne pouvant avilir l'esprit, on se venge en le maltraitant. Mes joues creusaient; mon terme était échu; je voyais de loin arriver l'affreux recors, la plume fichée dans sa perruque; en *frémissant* je m'évertue.

Quand on veut reprendre avec utilité, et montrer à un autre qu'il se trompe, il *faut* observer par *quel* côté il envisage la chose, car elle est vraie ordinairement de ce côté-là, et lui avouer cette vérité, mais lui découvrir le côté par où elle est fausse. Il se contente de cela, car il voit qu'il ne se trompait pas et qu'il manquait seulement à voir tous les côtés. Or, on ne se fâche pas de ne pas tout voir. Mais *on* ne *veut* pas s'être trompé; et peut-être que cela vient de ce que naturellement l'homme ne *peut* tout voir, et de ce que naturellement il ne se peut tromper dans le côté qu'il *envisage*; comme les appréhensions des sens sont toujours vraies.

Parse the words in Italics, tracing, where you are able, their descent from the Latin: and, in the case of verbs, give the 3rd person singular of the Perfect and Future Indicative, and of the Present Subjunctive.

II. *Translate, or give equivalents for:*

Qui terre a guerre a. Bon chien chasse de race. Il faut se soumettre ou se démettre. Je prétends vous traiter comme mon propre fils. Prétendre la première place. Prétendre à la première place. Un avocat. Un avoué.

PART II.

III. *Translate into French:*

The barometer points to wet.
He is wrong and his sister is right.
It is hotter here than in the open air.
Nothing was any good.
With his friend it was not the same thing.
There can be no question of going to-morrow.
You are all abroad in your reasoning.
Adversity has its uses.

IV. *Translate into French:*

In the midst of my labours and my changes of place I had the happiness of being able to cultivate my mind in intimacy with a young man of merit whom Providence bestowed on me for companion and friend. His fondness for the natural sciences had made him join our expedition, and he behaved himself on it as a good soldier: but it was easy to see that political sympathy played only a secondary part in his resolution. He had no desire for promotion, no aptitude for strategical studies. His herbal and his observations in zoology occupied him a

great deal more than the success of the war and the triumph of liberty. He fought too well, when the opportunity came, ever to merit the reproach of lukewarmness; but up to the very eve of the combat, and from the day after it, he seemed unaware that there was a question of aught but a scientific excursion in the savannahs of the new world. His portmanteau was always filled, not with money and clothes, but with specimens of natural history; and whilst we, as we lay on the grass, were attentive to the slightest noises which might reveal to us the enemy's approach, he was absorbed in the analysis of a plant or an insect. He was an admirable young man, pure as an angel, disinterested as a stoic, patient as a savant, and playful and affectionate along with it all. When a surprise placed us in danger, he had no cares and exclamations but for the precious pebbles and invaluable blades of grass which he carried behind his saddle; and yet, when one of us was wounded, he tended him with incomparable kindness and zeal.

COMPOSITION.

V. *Développer une de ces pensées:*

Nous avons plus de force que de volonté.

LA ROCHEFOUCAULD.

Nous devons à notre âme de lui donner toutes les formes possibles.

VOLTAIRE.

Il y a de la géométrie partout, et de la morale partout.

LEIBNITZ.

FRENCH DICTATION.

Ainsi Shakespeare à Londres était où il devait être, dans la fournaise d'hommes où s'enflamma son génie. Il n'avait alors que 22 ans. Il se promenait solitaire dans les rues encombrées, il longeait la Tamise, examinait les matelots, les soldats, les ouvriers. Il rôdait autour des hôtels de la noblesse, il remarquait l'air martial des puissants de l'aristocratie, les parures, les physionomies des grandes dames. Il s'approchait des palais et des jardins de la reine. Il la regardait quelquefois de loin, entourée de sa cour, lorsqu'elle se promenait dans les allées de ses parcs, ou lorsqu'elle fendait la rivière sur sa barge somptueuse, au battement cadencé des rames et aux sons harmonieux des luths. Et c'est après avoir erré le jour que, le soir, Shakespeare revenait au théâtre, où les foules bigarrées, les auditoires du poète, se dirigeaient de partout—les nobles à cheval, les commerçants et le peuple à pied. Shakespeare n'était pas exclusif. La nature humaine entière lui était nécessaire, depuis les mendiants en guenilles jusqu'aux seigneurs en manteaux de velours. Les spectacles, dans leur diversité, étaient du reste un goût général; après les guerres civiles des deux roses, ils étaient une fièvre de curiosité pour toute l'Angleterre, comme ils furent une fièvre de création pour Shakespeare.

GERMAN.

DR. A. HAMANN.

Monday, 30th June 1879. 2 P.M. to 5.30 P.M.
(Including the time occupied in Dictation).

I.—*Translate into English:—*

Philipp der Zweite empfing die Niederlande in der höchsten Blüthe ihres Wohlstandes. Er war der erste ihrer Fürsten, der sie vollzählig antrat. Sie bestanden aus siebenzehn Landschaften, die verbunden einen großen und mächtigen Staat ausmachten, der mit Königreichen wetteifern konnte. Höher als er damals stand, konnte ihr Handel nicht mehr steigen. Ihre Goldgruben waren über der Erde, aber sie waren unerschöpflicher und reicher als alle Minen in Amerika. Diese siebenzehn Provinzen, die zusammengenommen kaum den fünften Theil Italiens betragen, brachten ihrem Beherrscher nicht viel weniger ein, als ganz Britannien seinen Königen trug, ehe diese noch die geistlichen Güter zu ihrer Krone schlugen. Eben jetzt stand die Nation im Meridian ihres Glanzes; Fleiß und Ueberfluß hatten das Genie des Bürgers erhoben, seine Begriffe aufgehellt, seine Neigungen veredelt; jede Blüthe des Geistes erschien mit der Blüthe des Landes.

SCHILLER.

Noch eine Hauptschwierigkeit machten die beiden Gemälde, auf die sich Hamlet in der Scene mit seiner Mutter so heftig bezieht. "Mir sollen," sagte Wilhelm, „in Lebensgröße beide im Grunde des Zimmers neben der Hauptthür sichtbar sein; und zwar muß der alte König in völliger Rüstung, wie der Geist, auf eben der Seite hängen, wo dieser hervortritt. Ich wünsche, daß die Figur mit der rechten Hand eine befehlende Stellung annehme, etwas zurückgewandt sei und gleichsam über die Schulter sehe, damit sie dem Geiste völlig gleiche in dem Augenblicke, da dieser zur Thüre hinausgeht. Es wird eine große Wirkung thun, wenn in diesem Augenblicke Hamlet nach dem Geiste und die Königin nach dem Bilde sieht. Der Stiefvater mag dann im königlichen Ornat, aber unscheinbarer als jener vorgestellt werden.

GOETHE.

Translate into English the following phrases:—

1. Nichtswürdig iſt die Nation, die nicht Ihr Alles freudig ſetzt an ihre Ehre.
2. Er ſtand nicht an, für ſein Vaterland ſein Leben in die Schanze zu ſchlagen.
3. Ihm lag zu viel an der guten Meinung der Leute.
4. Der Apfel fällt nicht weit vom Stamm.

II.—*Grammatical Questions.*

1. Explain the rule concerning the Oratio Obliqua in German.
2. What difference is there between kennen, können, and wiſſen?
3. Enumerate the cases in which the order of subject and verb must be inverted in German.
4. Give the various translations of "since" in German, and of „denn" in English.
5. Conjugate the singular of the indicative present of nachlaſſen, abrathen, and durchbrechen.
6. Distinguish between fragen, bitten, fordern, verlangen, and beten.

III.—*Translate into German:—*

With the Peace of Wedmore in 878 began a work even more noble than this deliverance of Wessex from the Danes. "So long as I have lived," wrote Alfred in later days, "I have striven to live worthily." He longed, when death overtook him, "to leave to the men that come after a remembrance of him in good works." The aim has been more than fulfilled. The memory of the life and doings of the noblest of English rulers has come down to us living and distinct through the mist of exaggeration and legend that gathered round it. Politically or intellectually, indeed, the sphere of Alfred's action is too small to justify a comparison of him with the few whom the world claims as its greatest men. What really lifts him to their level is the moral grandeur of his life. He lived solely for the good of his people. He is the first instance in the history of Christendom, of the Christian king, of a ruler who put aside every personal aim and ambition to devote himself to the welfare of those whom he ruled.

J. R. GREEN.

IV.—*Translate into German the following phrases:—*

1. I could not help laughing when I saw him in this situation.
2. Have you succeeded in getting what you wanted?
3. Why did he insist on your going to the University?

German Composition.

V.—*Write an Essay on one of the following Themes:*

1. Ueber die Bedeutung des Mittelländiſchen Meeres in der Vergangenheit und in der Gegenwart.
2. Ueber den Einfluß der Schule auf den Character des Knaben.

GERMAN DICTATION.

Odyſſeus ergriff den Bogen; mit leichter Mühe ſpannte er die gewaltige Waffe, und ziſchend flog der Pfeil durch die zwölf Ringe. Jetzt aber hatte die große Stunde geſchlagen; der Held ſtand in ſeiner wahren Geſtalt vor ſeinen Feinden und rief: „Dieſer Wettkampf iſt alſo vollendet; nun aber wähle ich mir ein anderes Ziel das noch kein Schütze getroffen hat!" und mit dieſen Worten ſchoß er dem Antinous, dem übermüthigſten unter den Freiern, einen Pfeil durch die Gurgel, daß er den Becher aus der Hand fallen ließ und zum Boden ſtürzte. Noch hatten die Freier nicht Zeit gehabt auch nur zu überlegen, was ihnen bevorſtand, ſo lag ſchon ein Zweiter, von einem Pfeile durchbohrt todt am Boden, und im nächſten Augenblicke hauchte ein dritter ſeinen Geiſt aus. „Ha, ihr Hunde!" rief Odyſſeus indem er von neuem den furchtbaren Bogen ſpannte, „ihr glaubtet ich würde nimmer zur Heimath zurückkehren, darum verzehrtet ihr mein Gut und wolltet mir mein Weib nehmen! Jetzt iſt die Stunde der Rache gekommen, und ich denke, keiner von euch ſoll mir entrinnen.

ITALIAN.

M. TRISTAN GRATIEN.

Tuesday, 1st July 1879. 2 P.M. to 5.30 P.M.

I.—*Translate into English:—*

O quante sono incantatrici, o quanti
Incantator tra noi, che non si sanno;
Che con lor arti uomini, e donne, amanti
Di se, cangiando i visi lor, fatto hanno:

Non con spiriti costretti tali incanti,
Nè con osservazion di stelle fanno ;
Ma con simulazion, menzogne, e frodi
Legano i cor d'indissolubil nodi.
Chi l'anello d'Angelica, o più tosto
Chi avesse quel della ragion, potria
Vedere a tutti il viso, che nascosto
Da finzione, e d'arte non saria.
Tal ci par bello, e buono, che deposto
Il liscio, brutto, e rio forse parria.
Fu gran ventura quella di Ruggiero,
Ch'ebbe l'anel, che gli scoperse il vero.

Ruggier, com'io dicea, dissimulando,
Su Rabican venne alla porta armato.
Trovò le guardie sprovedute, e quando
Giunse tra lor, non tenne il brando a lato.
Chi morto, e chi a mal termine lasciando,
Esce del ponte, e'l rastrello ha spezzato.
Prende al bosco la via ; ma poco corre,
Ch' ad un de' servi della Fata occorre.

LODOVICO ARIOSTO.

Il sole non era ancora tutto apparso sull' orizzonte, quando il padre Cristoforo uscì del suo convento di Pescarenico per salire alla casetta dove era aspettato. E Pescarenico una terricciuola sulla riva sinistra dell' Adda, o vogliam dire del lago: un gruppetto di case abitate la più parte da pescatori, e addobbate qua e là di tramagli e di reti tese ad asciugare. Il convento era posto al di fuori, e in faccia all' entrata della terra, con di mezzo la via che da Lecco conduce a Bergamo. Il cielo era tutto sereno; a misura che il sole si alzava dietro il monte, si vedeva la sua luce dalla sommità dei monti opposti, scendere, come spiegandosi rapidamente giù per le chine e nella valle. Un venticello d'autunno spiccando dai rami le foglie appassite del gelso, le portava a cadere a qualche passo dall' albero. A dritta e a sinistra nei vigneti sui tralci ancor tesi brillavano le foglie rosseggianti a varie tinte, e le aiuole lavorate di fresco, spiccavano brune e distinte fra i campi di stoppie biancastre e luccicanti per la guazza. La scena era lieta; ma ogni figura d'uomo che vi si movesse, contristava lo sguardo ed il pensiero. Ad ogni tratto s'incontravano mendichi laceri e macilenti, o invecchiati nel mestiere, o indotti allora dalla necessità a tendere la mano. Passavano cheti accanto al padre Cristoforo, lo guardavano pietosamente, e benchè non avessero nulla a sperare da lui, giacchè un cappuccino non toccava mai moneta, gli facevano un inchino di ringraziamento per la elemosina che avevano ricevuta, o che andavano a cercare al convento.

MANZONI.

II.—*Translate into English the following phrases :—*

Ha fatto ciò che gli avete comandato in quanto se ne parla.
Dorme nella grossa.
Prendere una cosa pel suo verso.
Non trovo verso a far questo lavoro.
Trattar colle buone, o colle cattive.
Eccovi un vestito bell' e fatto.

III. *Grammatical Questions.*

1. Give the Italian for :

great, greater, greatest.
small, smaller, smallest.
quick, quicker, quickest.

2. What is the rule concerning the past participle and the accusative in Italian ? Exemplify by short sentences.

3. Which are the diminutives and augmentatives most frequently used ?

4. Which are the regular verbs of the third conjugation in Italian ?

IV.—*Translate into Italian :—*

At that instant the whoop was given, and a dozen Hurons fell by a discharge from Chingachgook and his band. The shout that followed was answered by a single war-cry from the forest, and a yell passed through the air that sounded as if a thousand throats were united in a common effort. The Hurons staggered, deserting the centre of their line, and Uncas issued from the forest through the opening they left at the head of a hundred warriors. Waving his hands right and left, the young chief pointed out the enemy to his followers, who separated in pursuit. The war now divided, both wings of the broken Hurons seeking protection in the woods again, hotly pressed by the victorious warriors of the Lenape. A minute might have passed, but the sounds were already receding in different directions, and gradually losing their distinctness beneath the echoing arches of the woods. One little knot of Hurons, however, had disdained to seek a cover, and were retiring, like lions at bay, slowly and sullenly up the acclivity which Chingachgook and his band had just deserted, to mingle more closely in the fray. Magua was conspicuous in this party, both by his fierce and savage mien, and by the air of haughty authority he yet maintained.

J. FENIMORE COOPER.

V.—*Translate into Italian the following :*

To sail round the world.

To serve one's time.

We have been feeling our way in the dark for hours.

The fellow turned out a villain.

We believe in the immortality of the soul, and have believed in it from our youth.

A man is said to be passive when he hears, sees, or feels, because he hears, sees, or feels whether he will or not.

Subject for a short essay in Italian : " La patria."

ARITHMETIC AND ALGEBRA.

A. S. BUTLER, Esq.

Monday, 23rd June 1879. 2 P.M. to 5 P.M.

1. A merchant sells tea to a tradesman at a profit of 44 per cent.; but the tradesman, becoming bankrupt, can only pay 13*s.* 4*d.* in the pound. How much does the merchant gain or lose by the transaction?

2. An enclosure 360 yards long and 150 broad is to be covered with turf at the cost of $1\frac{1}{2}d.$ per square yard. Along each side of it there is a gravel path 25 feet broad, and two others each 22 feet broad join the middle points of the opposite sides.
   Find the cost of covering with turf the remaining parts.

3. A person invests half his income in the 3 per cents. at 91 and the other half in the $3\frac{1}{2}$ per cents at 98. Which is the best investment? If in three years and four months he receives £875 as income, what is his capital, supposing the interest to be simple?

4. Two clocks A and B are 8 minutes slow at 9 p.m. on Monday. B loses in a given time $\frac{3}{5}$ of what A gains. What time will B indicate if A is right at 5 a.m. the following Friday?

5. Find the value of—

$$\frac{6\cdot60416}{33\cdot02083} \div \frac{2\cdot7722}{11\cdot09}$$

   expressing the result as a decimal, and reduce to its simplest form—

$$\frac{\sqrt{1\cdot75} - \sqrt{\cdot63}}{\sqrt{3\cdot5} - \sqrt{2\cdot1}}.$$

6. Multiply together

$$x - 1 + \frac{1}{x},\ x + 1 - \frac{1}{x},\ x^2 + 1 - \frac{2}{x} + \frac{1}{x^2}:$$

   divide $x^{12} - x^{-12} + 6(x^8 - x^{-8}) + 9(x^4 - x^{-4})$
   by $x^6 - x^{-6} + 3(x^2 - x^{-2})$.

7. Simplify the expressions

(i.) $$\frac{a + \dfrac{ab}{c+d}}{c + \dfrac{cd}{a+b}} \times \frac{a+b+d}{b+c+d} \div \frac{a+b}{c+d}.$$

(ii.) $$\frac{1}{x} - \frac{1}{(x+1)^2} - \frac{2}{x+1} + \frac{x}{x^2+x+1}.$$

8. What is meant by the Greatest Common Measure of two quantities? Find that of $8x^3 - 8$ and $7x^3 - 2x^2 - 5$.
   Find the Least Common Multiple of $4x^2y^2$; $6x^3y^3$; $x^2 - y^2$; $x^3 - y^3$; and $x^2y^3 - x^3y^2$.

9. Find the square roots of

$$x^2y^2 + 3y^2 + \frac{y^2}{x^2} + 2xy^2 + 2\frac{y^2}{x}$$

and $8 + 2\sqrt{15}$.

10. Solve the equations:

(i.) $\frac{x-2}{3} + \frac{x-3}{2} + 7\frac{1}{6} = 0.$

(ii.) $x^2 - 3\sqrt{2x^2 - x + 2} = x(1 - x).$

(iii.) $ax + by = xy = cx + dy.$

11. Show how to find the sum of the series a, ar, ar^2, ar^3, &c., (1) to n terms, (2) to infinity. Prove that of any two algebraical quantities the square of the geometric mean is equal to the product of the arithmetic and harmonic means.

12. Find the number of permutations of n things taken r together.

In how many ways can a crew of 8 men be arranged in a boat?

If only three are fit to row the stroke oar, in how many ways can they then be arranged?

13. Assuming the truth of the Binomial Theorem for positive indices, prove it for negative integral indices.

What is the coefficient of x^8 in the expansion of

$$\frac{1}{1 + x + x^2 + x^3}?$$

14. A man walking from a town A to another B at the rate of $3\frac{1}{3}$ miles per hour starts 40 minutes before the departure of a coach from A that goes 10 miles per hour; and is picked up by it on the way. When he arrives at B, he finds that his journey by coach has lasted $2\frac{2}{3}$ hours.

Find the distance between A and B.

15. How are calculations aided by the use of logarithms?

If the logarithm of a given number to the base 4 is ·35184, what is its logarithm to the base 8?

Given log 2 = ·301030, find to four places of decimals the value of x from the equation $5^{x+2} = 8^{2x-1}$.

GEOMETRY.

Rev. JOHN BOND, M.A.

Tuesday, 24th June 1879. 10 A.M. to 1 P.M.

1. From a given point draw a straight line equal to a given straight line.

How many straight lines satisfying the given conditions can be obtained by Euclid's construction?

2. The opposite sides and angles of parallelograms are equal to one another.

   The straight lines joining the extremities of one diagonal of a parallelogram with the middle points of either pair of opposite sides will trisect the other diagonal.

3. If a straight line be divided into two equal and also into two unequal parts, the rectangle contained by the unequal parts, together with the square on the line between the points of section, is equal to the square on half the line.

   Find the greatest rectangle having a given perimeter.

4. The angle at the centre of a circle is double of the angle at the circumference on the same base, that is, on the same part of the circumference.

   P is any point on the circumference of a segment of a circle, whose base is AB; AP is produced so that PQ = PB; show that the locus of Q is a circle, and find its centre and radius.

5. Inscribe a circle in a given triangle.

   Show that the radius of the circle touching one of the equal sides of an isosceles triangle and the other side produced and the base produced is equal to the perpendicular altitude of the triangle.

6. In a right-angled triangle, if a perpendicular be drawn from the right angle to the base, the triangles on each side of it are similar to the whole triangle and to one another.

   Prove that the segments of the base are to one another in the duplicate ratio of the sides which contain the right angle.

7. Show how to describe a regular pentagon equal to a given triangle, and verify your construction.

8. If two straight lines meeting one another be parallel to two others that meet one another, and are not in the same plane with the first two, the first two and the other two shall contain equal angles.

   The planes which contain a solid angle are cut by parallel planes; show that the sections are similar polygons.

9. The tangents at the extremities of any focal chord of a conic section intersect in the directrix.

   Find by construction the focus, directrix, axis, and vertex of the parabola which touches the two sides of a right-angled triangle at the ends of the hypothenuse.

10. The tangent at any point P of an ellipse makes equal angles with the focal distances SP, S'P.

    If the normal at P meets the axes in G, G' respectively, then will the triangles SPG, S'PG' be similar.

11. No two chords of a parabola can bisect each other, and two chords of an ellipse can only bisect each other when they intersect in the centre.

12. If PN be the ordinate of any point P on the hyperbola whose transverse axis is AA′, the square on PN will bear a constant ratio to the rectangle under AN, NA′.

The tangent at any point P of a circle meets a fixed diameter AB produced in T: show that the straight line drawn through T perpendicular to this diameter will cut AP, BP produced in points which lie on a certain rectangular hyperbola.

PURE MATHEMATICS. (1.)

W. H. BESANT, Esq., F.R.S.

Tuesday, 24th June 1879. 2 P.M. to 5 P.M.

1. If the angle A be greater than the angle B, and less than a right angle, prove, by means of geometrical figures, the formulæ,

$$\cos(A - B) = \cos A \cos B + \sin A \sin B,$$

$$\cos B - \cos A = 2 \sin \frac{1}{2}(A + B) \sin \frac{1}{2}(A - B).$$

Prove that

$$\tan 5A - \tan 3A - \tan 2A = \tan 5A \,.\, \tan 3A \,.\, \tan 2A.$$

2. Find the sine and cosine of an angle of 18°, and prove that

$$\sin 9° = \frac{1}{4}\sqrt{3 + \sqrt{5}} - \frac{1}{4}\sqrt{5 - \sqrt{5}}.$$

3. If R be the radius of the circumscribed circle of a triangle ABC, prove that the distances between the centres of the escribed circles are respectively

$$4R \cos \frac{A}{2},\ 4R \cos \frac{B}{2},\ 4R \cos \frac{C}{2}.$$

If D, E, F be the centres of these circles, prove that the distances between the centres of the escribed circles of the triangle DEF are respectively

$$8R \cos \frac{B + C}{4},\ 8R \cos \frac{C + A}{4},\ 8R \cos \frac{A + B}{4}.$$

4. Enunciate and prove De Moivre's Theorem.

Find the five values of the expression $\left(\frac{1 + \sqrt{-3}}{2}\right)^{\frac{1}{5}}$.

If $\log(x + y\sqrt{-1}) = \alpha + \beta\sqrt{-1}$, prove that $x^2 + y^2 = \epsilon^{2\alpha}$, and $y = x \tan \beta$.

5. Prove that the sum of n terms of the series

$$\sin\theta + \sin 3\theta + \sin 5\theta + \sin 7\theta + \ldots \text{ is } \frac{\sin^2 n\theta}{\sin\theta},$$

and that the sum of the infinite series

$$\sin\theta + \frac{\sin 2\theta}{\underline{|2}} + \frac{\sin 3\theta}{\underline{|3}} + \ldots \text{ is } \epsilon^{\cos\theta} \sin(\sin\theta).$$

6. Find the condition that the two straight lines $y = mx + c$, $y = m'x + c'$ may be at right angles to each other (1) when the axes are rectangular, (2) when the axes are oblique.

If ω be the angle between the axes, find the equations of the two straight lines through the point (h, k), one of which is perpendicular to the axis of x, and the other perpendicular to the axis of y.

7. Prove that the circles whose equations are

$$x^2 + y^2 - 2ax - 2by + c^2 = 0 \ldots (\alpha),$$
$$x^2 + y^2 - c^2 = 0 \ldots (\beta),$$

intersect each other at right angles, and find the equation of their chord of intersection.

If P and Q be the common points of the two circles, prove that the tangents to the circle (α) at P and Q are represented by the equation

$$(ax + by)^2 = c^2 (x^2 + y^2),$$

and that the tangents to the circle (β) at P and Q are represented by the equation

$$(x^2 + y^2 - c^2)(a^2 + b^2 - c^2) = (ax + by - c)^2.$$

8. Define the eccentric angle of a point of an ellipse, and prove that the eccentric angles of the ends of a pair of conjugate diameters differ by a right angle.

If CP, CD be a pair of conjugate semi-diameters, and if φ be the eccentric angle of P, find, in terms of φ, the product of the perpendiculars from the centre C on the tangents at P and D, and hence find the greatest and least values of this product.

9. Find the equation of the tangent at any point (x, y) of the curve $x^2 - y^2 = a^2$, and prove that the locus of the feet of the perpendiculars from the origin on the tangents is the curve $r^2 = a^2 \cos 2\theta$.

10. If $f(x, y) = 0$ represent a curve of the second order, show how to find the co-ordinates of its centre and the equation of its asymptotes.

Prove that the asymptotes of the curve

$$y^2 + 2xy - 3x^2 - 5y + x + 6 = 0$$

are represented by the equation

$$y^2 + 2xy - 3x^2 - 5y + x + 4 = 0,$$

and trace the curve.

11. Prove that, in an equation with real coefficients, imaginary roots occur in pairs.

Form the equation of the 6th degree with rational coefficients, of which one root is $\sqrt{-1}$, and another root is $\sqrt{2} + \sqrt{-1}$.

12. If α, β, γ be the roots of the equation

$$x^3 - px^2 + r = 0,$$

prove that the equation of which the roots are

$$\beta + \gamma - \alpha,\ \gamma + \alpha - \beta \text{ and } \alpha + \beta - \gamma \text{ is}$$
$$y^3 - py^2 - p^2y + p^3 - 8r = 0.$$

13. Explain Newton's method of divisors for finding the commensurable roots of an equation, and apply it to the equation

$$x^4 - 6x^3 + 11x^2 - 30x + 72 = 0.$$

PURE MATHEMATICS (2.)

W. D. NIVEN, Esq.

Wednesday, 25th June 1879. 10 A.M. to 1 P.M.

1. Show how to differentiate a function of the form $F(x) f(x)$.
   Find the differential coefficients of the following expressions:
   (1) $x^c \log_a x$, (2) $\sec^{-1}\sqrt{1 - e^{cx}}$, (3) e^{x^x}.

2. Find the n^{th} differential coefficients of $e^{cx} x^3$.

3. State Maclaurin's theorem, and find the expansion of y in ascending powers of x as far as x^3, when $\tan y = 1 + ax + bx^2$.

4. Show how to find the limiting value of a function which for a particular value of the variable takes the form 1^∞.
   Find the limiting values, when $x = 0$, of

   (1) $$\frac{\frac{a}{x}\sin\frac{x}{a} - 1}{\frac{c}{x}\sin\frac{x}{c} - 1}.$$

   (2) $$\frac{\left(\frac{a}{x}\sin\frac{x}{a}\right)^{\frac{a}{x}} - 1}{\left(\frac{c}{x}\sin\frac{x}{c}\right)^{\frac{c}{x}} - 1}.$$

5. Find the maximum value of $(x - a)^2 (x - b)$, first when $a > b$, next when $a < b$. What happens if $a = b$? Illustrate your answer by diagrams of the curve $y = (x - a)^2 (x - b)$ in the three different cases.

6. Trace the curve

$$x(x + y)^2 = a(x - y)^2.$$

7. The equation of a curve being given in polar co-ordinates, show how to find the length of the perpendicular from the pole upon the tangent at any point. Find also the curvature at the point.
   Find the quantities referred to in the case of the curve $r = a(1 + \cos\theta)$ and show that the chord of curvature through the pole is four thirds of the radius vector.

8. Prove the rule for integration by parts, and integrate
   (1) $x^3 \log x \, dx$.
   (2) $(a^2 + x^2)^{\frac{3}{2}} \, dx$.
   (3) $\mathrm{Sec}^3 x \, dx$.

9. Find the values of

$$(1) \int_0^{2a} x^2 \cos^{-1}\left(\frac{a-x}{a}\right) dx.$$

$$(2) \int_0^1 \frac{dx}{(1+x^2)(1+x)^2}.$$

$$(3) \int_0^{\pi} \frac{d\theta}{a + c\cos\theta}.$$

10. Prove that the area of the curve

$$r^2 (2c^2 \cos^2\theta - 2ac \sin\theta \cos\theta + a^2 \sin^2\theta) = a^2c^2$$

is equal to πac.

11. Find the volume and surface of the ring obtained by the revolution of a circle about a line in its plane.

12. Find the condition that two straight lines whose equations are given may be at right angles to one another.

Find the condition that the lines in which the plane

$$lx + my + nz = 0$$

cuts the cone $px^2 + qy^2 + rz^2 = 0$

may be at right angles.

13. Find the condition that two straight lines whose equations are given may intersect, and in that case determine the equation of the plane which contains them.

14. Find the equations of the two central circular sections of an ellipsoid and prove that any other sections parallel to these are also circles.

Two such sections, parallel respectively to the two central sections, being specified by their distances from the centre of the ellipsoid, find the equation of the sphere of which also they are sections.

15. Find the volume included between the circular cylinder $x^2 + y^2 = a^2$ and the two planes $z = 0$, $lx + my + nz - p = 0$.

PURE AND MIXED MATHEMATICS (Easy Problems).

No Candidate is expected to attempt more than about one-third of the following questions.

Rev. H. W. WATSON, M.A.

Wednesday, 25th June 1879. 2 P.M. to 5 P.M.

1. There are two triangles ABC and DBC on the same base BC and on the same side of it; AB and AC are each equal to one-half the sum of DB and DC, and DB cuts AC in E. Prove that BE is greater than EC, and AE is greater than DE.

2. Two parallel chords AB and CD are drawn in the circle ABDC, whose centre is E. The chord CD is bisected in F, and a circle is described passing through the points A, E, and F, and cutting the given circle a second time in G. Prove that BFG is a straight line.

   Prove also that the tangents to the given circle at A and G intersect on CD produced.

3. The point E is taken in the diagonal AC of the rhombus ABCD such that AE is $\frac{1}{4}$th of AC and BE is produced to meet AD in F.

   Prove that AF is the $\frac{1}{3}$rd of AD.

   Generalise this proposition.

4. Two tangents are drawn to a parabola from a given point P without it, and they cut the tangent to the parabola at the vertex A in the points Y_1 and Y_2.

   Prove, either analytically or geometrically, that AY_1 and AY_2 are together equal to the distance of P from the axis.

5. A straight line moves so that the sum of the squares of its distances from the two points A and B at a distance $2a$ apart is equal to d^2.

   Prove, either analytically or geometrically, that if d^2 be greater than $2a^2$ the line will always touch an ellipse whose centre is at the middle point of AB. Find the eccentricity of the ellipse and the position of the foci.

6. A parabolic section is made of a right cone, whose axis is VN, by the plane AP, the point A being the vertex of the section. If AN be the perpendicular from A on the cone's axis, and if NA be produced to B so that AB is equal to AN, prove that the distance of every point, P, of the curve from the cone's axis is equal to the distance of P from the plane through B perpendicular to AB.

7. If $x(1-y) = y(1-z) = z(1-x) = a$, prove that $x = y = z$ for all values of a different from unity.

8. Assuming that the arithmetic mean of any number of positive unequal numbers is always greater than their geometric mean, prove that if s be the sum of n unequal positive numbers a, b, c, &c. then

$$\sqrt[n]{(s-a)(s-b)\ \&c.} > \frac{s}{n-1}.$$

9. Prove that in every geometrical series of n positive terms whose first term is a and last term l the sum of any two terms equidistant from the ends of the series is less than $a + l$.

   Hence prove that the sum of all the terms is less than $\frac{n}{2}(a + l)$.

10. What is the meaning of the notation $\lfloor n$ where n is a positive integer?

If $P_x = \lfloor x \ \lfloor m-x \ \lfloor n-x \ \lfloor m-n+x$, where m, n, and x are positive integers in descending order of magnitude, prove that

$$\frac{P_{x+1}}{P_x} = \frac{(x+1)(m-n+x+1)}{(m-x)(n-x)}.$$

Apply this to prove that P_{x+1} is less than P_x unless $x > \frac{n-1}{2}$.

11. Apply the equation $(1-x^3) - (1-x)^3 = 3x - 3x^2$ to prove that

$$(1-x^3)^n = (1-x)^{3n} + 3nx(1-x)^{3n-2} + \frac{3n(3n-3)}{1.2}x^2(1-x)^{3n-4} + \&c.$$

12. There are two bank notes in a bag of which it is known that each of them is either a £5 or £10 note. One of them is drawn and found to be a £5 note. Prove that the odds are 2 to 1 that they were both £5 notes, and if the note drawn be replaced prove that the value of the expectation of the next drawing is £5. 16*s*. 8*d*.

13. If a number of 3 digits be divisible by 11, prove that the sum of the extreme digits must either be equal to the middle digit or must exceed it by 11.

If 3 of the digits 1, 2, 3, 4 be selected at random, prove that it is an equal chance that they may or may not be capable of being arranged into a number divisible by 11.

Also, if 3 of these digits be written down at random, prove that it is 5 to 1 against the number thus formed being divisible by 11.

14. If

$$\frac{\sin\theta}{\cos\theta - \cos\alpha} + \frac{\cos\theta}{\sin\alpha - \sin\theta} = \frac{1}{\sin(\alpha-\theta)},$$

find the general value of θ.

15. Prove that the expression

$$a\cos^2\theta + 2b\cos\theta\sin\theta + c\sin^2\theta \qquad (\alpha)$$

may be expressed in the form

$$\frac{a+c}{2} + \sqrt{m^2+n^2}\sin(2\theta+\varphi),$$

where $m = \frac{a-c}{2}$, $n = b$, $\tan\varphi = \frac{m}{n}$.

Hence prove that the greatest and least values of (α) are the roots of the equation

$$(x-a)(x-c) = b^2.$$

16. The lines AD, BE, and CF are drawn from the angles to the opposite sides of the triangle ABC so that the three ratios $\frac{BD}{DC}, \frac{CE}{EA}, \frac{AF}{FB}$, are all equal. Prove that if the aforesaid lines be called x, y, and z respectively

$$x^2(b^2-c^2) + y^2(c^2-a^2) + z^2(a^2-b^2) = 0.$$

Prove also that $x^2+y^2+z^2$ will be least when the above-mentioned ratios are each = 1.

17. Prove that

$$e^{\theta}(\cos\theta + \sqrt{-1}\sin\theta) = e^{\theta\sqrt{2}\left(\cos\frac{\pi}{4} + \sqrt{-1}\sin\frac{\pi}{4}\right)}.$$

Hence prove that the coefficients of θ^{2n} in the expansions of $e^{\theta}\cos\theta$ and $e^{\theta}\sin\theta$ will be

$$\frac{2^n}{\lfloor 2n}\cos\frac{n\pi}{2} \text{ and } \frac{2^n}{\lfloor 2n}\sin\frac{n\pi}{2} \text{ respectively.}$$

18. Apply the properties of the derived function $f'(x)$, or any other method, to determine the number and position of the real roots of the equation

$$f(x) = 3x^5 - 20x^3 + 45x + 10 = 0.$$

19. Three forces each equal to P act at O, the centre of the circle circumscribing the triangle ABC along the lines OA, OB, and OC. Prove that their resultant moment about the point A is 2 P . R cos A sin (B − C) where R is the radius of the circumscribing circle. Prove also that if L, M, and N be the moments about A, B, and C respectively

$$L + M + N = 0.$$

20. Two uniform rods AC and BC are joined together at right angles at C so as to form one uniform bent rod ACB.

This bent rod is supported over the edge of a rough horizontal table which touches AC at its middle point.

If BC = 3AC prove that the tangent of inclination of AC to the horizon is $\frac{2}{3}$.

Find also the least value of the coefficient of friction in order that the rod may rest with the end A on the edge.

21. What is meant by angular velocity, and when is one curve said to roll upon another?

A ring of radius a rolls upon the concave side of the circumference of a fixed ring of radius ma, the point of contact having the velocity v.

Prove that the angular velocity of the moving ring is

$$\frac{m-1}{m} \cdot \frac{v}{a}.$$

If $m = 2$ prove that every point on the moving ring describes a diameter of the fixed ring.

22. A number of bodies are dropped simultaneously from the heights m^2, n^2, &c. feet above a perfectly elastic horizontal plane, where m, n, &c. are whole numbers. Prove that, if g be taken as 32 on the usual assumption as to units, the whole system will be in its original position after successive intervals of $\frac{M}{2}$ seconds where M is the Least Common Multiple of m, n, &c.

23. Apply the result of the latter part of 21, when $m = 2$, to prove that if the moving ring be of no weight but have a heavy particle attached at one point, that particle will either remain at rest or describe a straight line with uniform acceleration, the planes of the rings being vertical.

STATICS AND DYNAMICS.

W. GARNETT, Esq.

Thursday, 26th June 1879. 10 A.M. to 1 P.M.

1. What is an *absolute* unit? Define a *poundal*, a *foot-poundal* and a *foot-pound*.

   In a certain system of absolute units the acceleration produced by gravity in a body falling freely is represented by 3, the kinetic energy of a 600 lb. shot moving with a velocity of 1,600 feet per second is denoted by 100 and its momentum by 10; find the units of length, mass, and time, assuming that g is equal to 32 in the foot-pound-second system.

2. State Newton's first law of motion and show that it implies a definition of force and a theoretical measure of time in addition to its statement of a natural law.

3. A number of forces act in one plane at a point; find the condition that they may be in equilibrium.

   Show that we obtain the same result for the work done during any small displacement of a mechanical system whether we suppose each force resolved along and perpendicular to the displacement of its point of application, or the displacement of the point of application of each force resolved along and perpendicular to the direction of the force.

4. Find the relation between the power and the weight in the case of a smooth screw.

   The coupling between two railway carriages consists of a right-handed and left-handed screw cut at opposite ends of the same rod and turning in nuts attached to the carriages. If the pitch of each screw be ·25 in. and the rod be turned by a force equal to the weight of 56 lbs. applied to the best advantage at the extremity of a lever 15 inches in length, find the forces with which the carriages will be drawn together.

5. Find the centre of gravity of a thin uniform hemispherical bowl.

   The centre of gravity of a homogeneous solid hemisphere is at a distance from the centre equal to $\frac{3}{8}$ths of the radius. If the hemisphere rest in equilibrium with its curved surface upon a rough plane inclined to the horizon at $\sin^{-1}\frac{3}{16}$, find the inclination of the base of the hemisphere to the vertical.

6. State Hooke's law and explain clearly what is meant by Young's modulus of elasticity for a given material.

   A steel wire whose length is one metre and sectional area one square millimetre becomes lengthened by ·15 mm. when loaded with 10 kilogrammes. Find the modulus of elasticity of the steel, stating clearly the units you employ.

7. Define the horse power of an agent.

   A blacksmith wielding a 14 lb. sledge strikes an iron bar 25 times per minute bringing the sledge to rest upon the iron after each blow. If the velocity of the sledge on striking the iron be 32 feet per second, compare the rate at which the smith works with a horse power.

8. State the conclusion to which Newton was led by the results of his experiments upon collision, and show that when two equal and perfectly elastic balls collide they exchange their velocities along the line of impact.

A perfectly inelastic body is brought to rest by coming into direct collision with a second perfectly inelastic body moving in the opposite direction. Show that the kinetic energy of the second body must be inversely proportional to its mass.

9. Show that the path of a projectile is a parabola, and find the direction of projection in order that the focus may be in the horizontal plane through the point of projection.

A shot is fired from a cannon on the top of a hill 400 feet above the sea with a velocity of 1,536 feet per second and at an elevation of 30°. Find the horizontal distance from the vertical line through the gun of the point where the shot first strikes the water.

10. Find an expression for the normal acceleration of a point moving with uniform velocity on the circumference of a circle in terms of the velocity of the point and the radius of the circle.

A heavy particle is suspended from a fixed point by a string 4 feet in length, and describes a horizontal circle with a uniform velocity of 20 feet per second under the action of gravity. Find the radius of the circle described.

MIXED MATHEMATICS (HIGHER).

W. D. NIVEN, Esq.

Thursday, 26th June 1879. 2 P.M. to 5 P.M.

1. The component velocities of a point moving in a plane are u and v parallel to rectangular axes which revolve with angular velocity ω: prove that the component accelerations of the point are

$$\frac{du}{dt} - v\omega \text{ and } \frac{dv}{dt} + u\omega.$$

Deduce the usual expressions for the tangential and normal accelerations.

A point P moves in an ellipse with relative velocity $n\sqrt{SP \cdot HP}$ where S and H are the two foci, and at the same time the ellipse revolves with uniform angular velocity n; prove that the component accelerations parallel to the axes are of the forms Ax, By where x and y are the co-ordinates of the moving point referred to the axes, and A and B are constants.

2. A body attracted to two fixed centres by forces varying as the first power of the distance rests in equilibrium: if a force of constant magnitude act upon it in a direction perpendicular to the line joining the two centres, find how far the force can carry the body; and if the force cease to act when the body has reached its extreme distance, find the whole time occupied from the beginning of the motion to the instant when the body passes again through its old position.

3. A particle projected from a given point moves under the attraction of a force directed to a fixed point and varying inversely as the square of the distance; find under what circumstances the orbit will be an ellipse, parabola, or hyperbola.

   A particle is projected from a point, at an inclination α to the radius vector R drawn to the centre of force, with velocity nV, which is such that if n were unity the orbit would be a parabola: find the position and dimensions of the orbit when n is less than unity.

4. Find the equations of motion applicable in the case when a particle describes a smooth curve line, not necessarily plane.

   A particle is projected from any point of the inside of a smooth paraboloid of revolution, whose vertex is its lowest point in a horizontal direction tangential to the paraboloid; determine according to the magnitude of the velocity whether the particle will attain a higher or lower level than that of projection.

5. A solid uniform cone stands upon a rough table; if a string be fastened to its vertex and pulled in a horizontal direction, find for a given value of the angle of the cone whether it will slip or overturn as the tension of the string is increased.

6. Show that a system of forces can always be reduced to a single force and a couple acting in a plane at right angles to the direction of the force.

   Reduce in this manner the system consisting of two equal forces acting along non-intersecting diagonals of two adjacent faces of a cube.

7. Determine the position of the centre of gravity of a hemisphere, (1) when it is of uniform density, (2) when the density at any point is a linear function of the co-ordinates of the point.

8. A heavy string is stretched over a rough plane curve: show how to find the tension at any point, and the resultant pressure on the curve.

   If the string lies upon a rough circular disk whose plane is vertical, one end being in the same horizontal line with the centre, find the length at the other end not in contact with the disk, when the string is on the point of moving.

9. A mass of liquid is at rest under the action of given forces; find the relations which must hold among the forces.

   A vessel in the form of a rectangular parallelopiped is full of liquid of uniform density, and the only force acting is an attraction to one of the corners, varying as the first power of the distance; find the pressure upon any one of the sides of the vessel, and the co-ordinates of the centre of pressure for that side.

10. What is meant by resultant pressure on a surface? Show how to find it in the case of a plane surface.

    A rectangular plate is immersed in two liquids, which do not mix, with one side horizontal, so that half is in the upper liquid and half in the lower; find the resultant pressure on the plate.

11. A cylindrical diving bell is let down till its top is at a depth of 19 feet. Its length is 5 feet, and the height of the water barometer 33 feet; how high will the water stand in the bell?

12. Explain the method of finding the difference of altitude of two stations above the earth's surface by means of the barometer, variations in temperature being disregarded.

If the barometer fall from A to A' in ascending a feet, what will be the fall in ascending c feet?

MECHANICAL PHILOSOPHY.

Professor J. STUART.

Saturday, 28th June 1879. 10 A.M. to 1 P.M.

1. What is meant by the Unit of Mass? If the unit of mass were doubled, the unit of time trebled, and the unit of force quadrupled, find what would be the change implied in the unit of length.

2. What is meant when it is said that gravity at a certain part of the earth's surface is 32·2?

Explain carefully any method whereby the force of gravity at a given place may be ascertained.

3. Explain what is meant when it is said that no work is required to break cast-iron, whereas work is required to break wrought-iron.

A cylinder of steel two inches long, which is capable of being extended 30 per cent. before breaking, is extended 2 per cent. when subjected to a pulling force of one ton. Supposing that Hooke's law holds good up to the breaking point, find the amount of work done in breaking the cylinder by extension if the extending force is increased gradually by one hundredweight at a time. What is the nature of the inaccuracy in the assumption that Hooke's law holds good throughout?

4. Describe any method by which a carriage such as a railway engine may be made to distribute its weight on its wheels in a given proportion.

5. A number of equal and nearly perfectly elastic balls are hung up by strings so as to form a horizontal row, each ball being almost in contact with the next. The ball at one end is raised so as to fall and swing, striking that next it in the line joining the centres of the balls; the ball at the other end of the row is observed to fly off, and to rise to a height very nearly equal to that from which the first was dropped, while the other balls are observed to remain apparently at rest. Explain this.

Also explain why it is that the row of balls gradually acquires an uniform oscillation which gradually subsides till the balls all come to rest.

6. What is a cycloidal pendulum? Why is it not generally employed? Why is it not generally of consequence whether a pendulum be cycloidal or not?

   Describe how the motion of the pendulum is sustained in any form of clock you please.

   How may the time of oscillation of a pendulum be indefinitely increased without indefinitely increasing its length?

7. Why is it difficult to fill with mercury a thermometer whose tube is long and thin? How is such a thermometer filled?

8. What is meant by an indicator diagram? Explain carefully how the horse-power of an engine can be ascertained by means of it.

   Show how by using the steam expansively the same horse-power may be obtained by the consumption of less steam than when it is used without expansion.

9. Describe *one* of the following:
   (1.) A screw-cutting lathe, explaining how a screw of given pitch may be cut by it.
   (2.) Watt's parallel motion expiaining how nearly it is exact.
   (3.) An hydraulic crane.

10. What is meant by the first point of Aries? How can its position be determined by observation? To what displacements, secular or periodic, is it subject?

11. Explain the method of obtaining the longitude at sea by lunar distances, describing the method of observation and explaining what is meant by "clearing the distance."

12. Explain how the forms of the hydrogen flames which surround the sun can be made visible by means of a spectroscope.

CHEMISTRY.

Dr. E. ATKINSON.

Saturday, 28th June 1879. 2 P.M. to 5 P.M.

1. To 360·6 cubic centimetres of air under standard conditions of temperature and pressure 197·2 cubic centimetres of hydrogen are added; after the mixture has been exploded by the electrical spark the residual gas is found to measure 330·5 cubic centimetres. What is the residue, and to what per-centage composition for air does the experiment lead?

2. Supposing that the hydrogen in the above experiment had been prepared by the action of sodium on water, what weight of water would have been decomposed, and what would have been the weight and the properties of the other substance produced. Na = 23?

3. Describe the preparation and mode of collecting a jar of ammonia. What is the action of iodine on a strong aqueous solution of this gas, and what takes place when hydrochloric and ammoniacal gases are mixed?

4. Describe the process of manufacturing bleaching powder. What are the principal applications of this substance? Describe any one of them.

5. The quantity of sulphuric acid produced in any country was stated by Liebig to be a measure of its chemical industry. Give reasons for this statement.

6. Phosphorus exists in two different modifications. Give some account of them, and shew how they may be transformed one with the other.

7. How is cyanogen gas prepared, and what are its chief properties? What are the properties of its compound with potassium?

8. What are reducing, and what oxidising actions? Describe and explain two instances of each.

9. Describe an experiment which shows that ammonia can be transformed into an oxide of nitrogen, and explain the importance of this experiment.

10. Give your reasons for supposing that calcium is a divalent, nitrogen a trivalent, and tin a tetravalent element.

ELECTRICITY AND MAGNETISM.

Professor G. D. LIVEING.

Wednesday, 2nd July 1879. 10 A.M. to 1 P.M.

1. Describe the electric action in a common frictional machine. Explain how this action is affected by (1) insulating the rubber, (2) hanging a short cotton thread on the conductor.

2. Define the capacity of an insulated conductor. Shew that it is affected by the neighbourhood of other conductors. An insulated conducting sphere of given radius receives a given charge of electricity, and another similar sphere, uncharged, is made to touch it and is then removed; find the potential energy of each, and the loss of energy attending the discharge between them.

3. What different kinds of work may be done by an electric discharge? On what factors does the amount of heat developed in the discharge of a Leyden jar depend?

   Faraday has stated that there is more electricity in the current of a small voltaic cell than in a great flash of lightning: explain in what kind of way the truth of such a comparison could be tested.

4. What are the best materials for (1) magnetic needles, (2) the cores of electro-magnets, (3) the wire of an electro-magnet? and what are the properties of these materials which make them the best?

5. Describe the general characters of the magnetic field at any place so far as it depends on the earth. If it be required, for the purpose of experiment, to neutralize as far as possible the influence of terrestrial magnetism, explain how to do it; and how to test whether the end has been attained.

6. Describe a tangent galvanometer; and explain in what cases it may be used with advantage, and in what cases it cannot be so used.

7. Describe a chemical voltameter, and how to use it.
Explain what information it gives. Why will it not do for measuring the current of a single Daniell's cell?

8. Given the resistances of two wires when used separately, determine their joint resistance when the current is divided between them.
Explain the apparent diminution of resistance of a land telegraph on a wet day; and shew how the battery must be modified to meet the case.

9. State the laws of dynamic induction of electricity.
A bar magnet has an insulated wire coiled round it and the two ends of the wire are connected with a galvanometer: state and explain the effects of bringing a soft iron bar near one end of the magnet and then removing it again.

10. In passing a current from an induction coil through a vacuum tube the current passes in one direction only, without alternating unless the primary be reversed: explain these facts. Explain also how you can determine in which direction the secondary current is passing in a vacuum tube.

HEAT AND LIGHT.

Professor G. D. LIVEING.

Tuesday, 1st July 1879. 2 P.M. to 5 P.M.

1. Define the temperature of a body. What is the law of variation of pressure of a gas at a constant volume when the temperature varies, and how is this law verified experimentally?
A porcelain bottle, holding 66 c. in. of air is connected by a very narrow neck to a tube dipping under water; the bottle is heated, and 46·2 c. in. of air are expelled; the bottle was at 13° C. at first and the expelled air was measured at 18°; find the temperature to which the bottle was heated.

2. How can it be shewn experimentally that the reflexion of heat follows the same laws as that of light?
Explain the greater loss of heat than of light by reflexion from a common looking glass.

3. Shew how the tension of aqueous vapour for different temperatures may be determined. How can the tension of the aqueous vapour in the air at any given time be determined?

4. Point out the principal ways in which mechanical energy becomes converted into heat. If two similar vessels, one full of air at the atmospheric pressure and the other exhausted, are made to communicate, state and explain the changes of temperature which occur in them.

5. Explain the principles of the different methods employed for determining specific heat.

6. A candle is placed between two plane mirrors at right angles to each other; determine where the successive images will lie, and compare the brightness of each with that of the candle, assuming that half the light which falls on a mirror is reflected.

7. You require to throw an image of the sun, a foot in diameter, on a screen; explain how to do it. Show on what the magnitude of the image depends.

8. Describe the construction of Newton's telescope. Point out the relative advantages of reflecting and refracting telescopes. How is it that stars which are invisible to the naked eye are visible through a telescope?

9. The sun shines through a small round hole in a shutter and the light falls on one face of a prism of 60° of which the refractive index is $\frac{\sqrt{3}}{2}$ for green light; shew whereabouts an eye must be placed in order to see the image of the hole through the prism. Also state and explain the appearance of that image.

10. Describe Newton's rings, and how they are produced. Give a general explanation of the cause of them, and mention other phenomena due to a like cause.

LOGIC.

Professor JEVONS, F.R.S.

Tuesday, 1st July 1879. 10 A.M. to 1 P.M.

1. What is the meaning of the assertion that logic is concerned with the form, and not with the matter, of thought?

2. Take any universal affirmative proposition which you like; convert it by obversion (contraposition); attach the negative particle to the predicate, and again convert. Interpret the result exactly, and say whether it is or is not equivalent to the original proposition.

3. What information about the term "solid body" can we derive from the proposition, "No bodies which are not solids are crystals"?

4. What do you understand by the logical *proof* of an assertion? Compare the logical meaning of the word *proof* with any other meanings of the word known to you.

5. Can we under any circumstances infer a relation between X and Z from the premises—

Some Y's are X's
Some Y's are Z's ?

6. Take an apparent syllogism subject to the fallacy of negative premises, and inquire whether you can correct the reasoning by converting one or both of the premises into the affirmative form.

7. If by two distinct methods of investigation you arrive at the same conclusion, namely, that the currency of the kingdom does not exceed one hundred millions sterling, but it is afterwards discovered that one of the methods of investigation involved fallacious reasoning, what would you be inclined to infer about the other method of investigation ?

8. England is the richest country in the world, and has a gold currency. Russia and India, in proportion to population, are poor countries, and have little or no gold currency. How far are such kinds of facts logically sufficient to prove that a gold currency is the cause of a nation's wealth ?

9. A man having been shot through the heart immediately falls dead. Investigate the logical value of such a fact as proving that all men shot through the heart will fall dead.

10. What is an *infima species*, or *species specialissima ?* Compare the use of the terms *genus* and *species* in logic with that which is common in speaking of animals or plants.

POLITICAL ECONOMY.

PROFESSOR JEVONS.

Monday, 30th June 1879. 10 A.M. to 1 P.M.

1. Some economists hold that their science is deductive in method like Geometry ; others believe that it is inductive or empirical, like Meteorology, for instance. What is your opinion about the matter, and what are your reasons for that opinion ?

2. Adam Smith says that "Rent enters into the composition of the price of commodities in a different way from wages and profit." How does he think that it enters ? and how far is Smith's opinion in agreement with that of subsequent leading English economists ?

3. What is meant by the *natural rate of wages ?* Is the doctrine of a natural rate of wages confirmed by experience ?

4. The judges of the land have always endeavoured to prevent "restraint of trade." How would you endeavour to define, from an economic point of view, what is illegitimate restraint of trade as distinguished from the due restraint of the factory acts, police regulations, &c. ?

5. Define precisely what you mean by *a pound sterling*. What do you know of the laws and regulations under which gold, silver, and bronze monies are coined and issued to the public in this country?

6. Enumerate the causes which may produce (1) a nominal, (2) a real variation in the rates of the foreign exchanges, mentioning in each case the limits, if any, within which the effect will be restrained.

7. It is common to hear it argued that Continental manufacturers can undersell those of England, owing to the lower rates of wages which prevail abroad. Investigate the circumstances in which such arguments are or are not valid.

8. Classify the usual assets of a banking house; and discuss the question whether, if a banker receive large deposits on current account at one or two per cent., and invest them in consols or other negotiable funds at 3 or 4 per cent., he will make satisfactory and legitimate profits thereby.

9. What do you understand respectively by a *mania*, a *crisis*, a *panic*, and a *collapse* in trade?

10. Apply the general principles of taxation to the case of the salt duty, and investigate the advantages and disadvantages which attach to that source of revenue.

SANSKRIT (1).

Professor E. B. COWELL.

Wednesday, 2nd July 1879. 10 A.M. to 1 P.M.

1. Apply the rules of Sandhi to

ते + दृङ्क्ष,

ऋतस्य + ऋतेन,

अमी + आसते,

एषः + अच,

एषः + दृह,

वाग् + होता,

रोदन् + ऋषिः,

एते + अमू.

2. Give the nominative singular of लक्ष्मी, स्त्री, गो, पुंस् and सर्वदृश्.

3. Give the genitive singular of पति, युवन् (masc.) and तक्षन्.

4. Give the accusative plural, masculine and feminine, of तिर्यञ्च्.

5. Give the accusative plural feminine of the participles अदत्, जुह्वत्, जानत् and तेनिवस्.

6. Give the dative and locative singular masculine of कश्चित्.

7. Give the instrumental plural masculine of इदम् and अदस्.

8. Give the second person, singular and dual, of the present Parasmaipada of दुह् (2).

9. Write out the singular of the imperfect Parasmaipada of भी (3), and give the third person plural.

10. Give the third person plural of the potential Parasmaipada of दा (3), युज् (7), and क्री (9).

11. Give the third person singular and the second person plural of the reduplicated perfect Parasmaipada of जि, त्यज्, स्त्री and तॄ.

12. From what roots do the following Aorists come, अजैषम्, अवाप्सम्, अमुचि, अक्षपि? Give the third person, singular and dual, of each.

13. Give the third person plural of the potential Parasmaipada of the causal of कृ, क्रध्, स्वप् and मा.

14. Give the infinitive and past passive participle of भुज्, सृज्, लिह्, क्षे and बन्ध्.

15. Give the third person singular of the present of the intensive, with य, of क्षिप् and दा, and, without य, of क्रुश् and वृध्.

16. When does a final स् become त् before case or tense affixes?

17. Define a Tatpurusha and a Bahuvríhi compound. What is the difference between महत्सखिः and महत्सखः?

18. *Translate into Sanskrit:*

a. The enemies came and destroyed the city; no man now lives there.

b. The queen wandered alone in the wood, and she heard a bird sing in a tree with a very sweet song. She forgot her sorrows as she listened; and when the bird ceased she was astonished to see that the sun was setting.

SANSKRIT (2).

Professor E. B. COWELL.

Wednesday, 2nd July 1879. 2 P.M. to 5 P.M.

Translate into English:

I.

भयशोकसमाविष्टा राजन् भीमसुता ततः ।
चिन्तयामास तत् कार्यं सुमहत् पार्थिवं प्रति ॥
सा शङ्कमाना तत्पापं चिकीर्षन्ती च तत्प्रियं ।
नलञ्च हृतसर्वस्वम् उपलभ्येदम् अब्रवीत् ॥

वैधव्यमपि सम्प्राप्ता गोपायन्ति कुलस्त्रियः ।
आत्मानम् आत्मना सत्यो जितस्वर्गा न संशयः ॥
रहिता भर्तृभिश्चापि न क्रुध्यन्ति कदाचन ।
प्राणांश् चारित्रकवचान् धारयन्ति वरस्त्रियः ॥
विषमस्थेन मूढेन परिभ्रष्टसुखेन च ।
यत् सा तेन परित्यक्ता तच्च न क्रोद्धुम् अर्हति ॥

Nala.

II.

पान्थोऽवदत्। कथं मारात्मके त्वयि विश्वासः। व्याघ्र उवाच। शृणु रे पान्थ। प्रागेव यौवनदशाथामतिदुर्वृत्त आसं। अनेकगोमानुषाणां वधान्मे पुत्रा मृता दाराश्च वंशहीनश्चाहं। ततः केनचिद्धार्मिकेणाहमादिष्टः। दानधर्मादिकं चरतु भवान्। तदुपदेशादिदानीमहं स्नानशीलो दाता वृद्धो गलितनखदन्तो न कथं विश्वासभूमिः।

आपत्सु मित्रं जानीयाद्युद्धे शूरमृणे शुचिं।
भार्यां क्षीणेषु वित्तेषु व्यसनेषु च बान्धवान्॥
उत्सवे व्यसने चैव दुर्भिक्षे राष्ट्रविप्लवे।
राजद्वारे श्मशाने च यस्तिष्ठति स बान्धवः॥

यद्ददाति यदश्नाति तदेव धनिनो धनम्।
अन्ये मृतस्य क्रीडन्ति दारैरपि धनैरपि॥
यद्ददासि विशिष्टेभ्यो यज्जाश्नासि दिने दिने।
तत्ते वित्तमहं मन्ये शेषं कस्यापि रक्षसि॥

धर्मार्थकाममोक्षाणां नैकांतकरणो भवेत्।
न हि सर्वक्षमयुक्तं क्षमावान् भवितुं क्षमः॥
क्षमा शौचे च मित्रे च यतीनामेव भूषणं।
अपराधिषु सत्त्वेषु कृपाणां सैव दूषणं॥

Hitopadeśa.

III.

Kṛishṇa, Arjuna's charioteer, urges him to attack Karṇa.

तमायान्तमभिप्रेक्ष्य वेलोद्वृत्तमिवार्णवम्।
अर्जुनं प्राह दाशार्हः* प्रहस्य पुरुषर्षभः॥
'अयं स रथ आयाति श्वेताश्वः पाण्डुनन्दन।
येन ते सह योद्धव्यं स्थिरो भव धनञ्जय॥
सर्वयत्नेन कौन्तेय हन्तुमर्हसि सूतजम्।
न हि कर्णशरान् अन्यः सोढुमुत्सहते नरः॥'

अर्जुन उवाच।

'ध्रुव एव जयः कृष्ण मम नास्त्यत्र संशयः।
सर्वलोकगुरुर्यस्यं तुष्टोऽसि मधुसूदन॥
चोदयाश्वान् हृषीकेश† रथं मम महारथ।
नाहत्वा समरे कर्णं निवर्तिष्यति फाल्गुनः‡॥
अद्य कर्णं हतं पश्य मच्छरैः शकलीकृतम्।
मां वा द्रक्ष्यसि गोविन्द कर्णेन निहतं शरैः॥
उपस्थितमिदं घोरं युद्धं त्रैलोक्यमोहनम्।
यज्ञनाः कथयिष्यन्ति यावद्भूमिर्धरिष्यति॥'
जयेन संपूज्य स पाण्डवं तदा प्रचोदयामास हयान् मनोजवान्
स पाण्डुपुत्रस्य रथो मनोजवः क्षणेन कर्णस्य रथायतोऽभवत्॥

Mahâbhârata.

IV.

पादोऽधर्मस्य कर्तारं पादः साक्षिणमृच्छति।
पादः सभासदः सर्वान् पादो राजानमृच्छति॥

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* A name of Kṛishṇa. † A name of Kṛishṇa.
‡ The name of Arjuna's bow.

राजा भवत्यनेनास्तु मुच्यन्ते च सभासदः।
एनो गच्छति कर्तारं निन्दार्हो यत्र निन्द्यते॥
जातिमात्रोपजीवी* वा कामं स्याद्ब्राह्मणध्रुवः।
धर्मप्रवक्ता नृपतेर्न तु शूद्रः कथंचन॥
यस्य शूद्रस्तु कुरुते राज्ञो धर्मविवेचनम्।
तस्य सीदति तद्राष्ट्रं पङ्के गौरिव पश्यतः॥

Manu.

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*ब्राह्मणजातिमात्रं यस्य विद्यते न तु ब्राह्मणकर्मानुष्ठानं वणिगादिवत्।

Comm.

CIVIL SERVICE OF INDIA.

Open Competition of June and July 1879.

TABLE OF MARKS.

In pursuance of paragraph 6. of the Regulations (*see* page 4.), a deduction of 100 has been made from the marks assigned in each subject, except English Composition and Mathematics.

INDIA CIVIL SERVICE.—EXAMINATION OF 1879.—TABLE OF MARKS.—SELECTED CANDIDATES.

Order of Merit.	No. in Examination.	NAME.	Age on 1st January 1879.	NUMBER OF MARKS OBTAINED.																		
				ENGLISH			Greek.	Latin.	French.	German.	Italian.	Mathematics.	NATURAL SCIENCE.					Logic.	Political Economy.	Sanskrit.	Arabic.	Total.
				Composition.	History.	Literature.							Chemistry.	Electricity and Magnetism.	Heat and Light.	Mechanical Philosophy and Astronomy.					
				Maximum Number of Marks.																		
				300	300	300	600	800	500	500	400	1,000	500	300	300	300	300	300	500	500	
1	12	Duff; Alan Colquhoun - -	18	195	113	122	396	623	261	253	198	—	—	—	—	—	—	34	—	—	2,195
2	66	Oakeshott; Jonathan - -	18	173	116	80	94	287	197	266	—	682	—	87	—	46	—	—	—	—	2,028
3	119	Meyer; William Stevenson -	18	149	162	121	282	402	228	—	220	170	—	—	—	0	100	—	—	—	1,834
4	6	Dance; George Whitmore -	17	124	138	101	370	562	202	287	—	15	—	—	—	—	—	—	—	—	1,799
5	56	Diack; Alexander Henderson -	16	188	137	96	132	292	—	—	—	707	—	—	—	34	70	—	—	—	1,656
6	79	Rennie; John Geo. Mackworth -	18	150	—	—	241	501	142	198	—	366	—	—	—	0	—	—	—	—	1,598
7	42	Lord; Walter Frewen - -	17	147	140	115	—	—	247	306	149	303	—	103	—	0	—	—	—	—	1,510
8	150	Branson; James Charles Emerton	18	188	53	38	—	180	170	130	—	548	119	—	—	74	—	—	—	—	1,500
9	88	Brownrigg; Francis William -	18	171	134	161	171	331	—	—	123	352	—	—	—	0	—	54	—	—	1,497
10	91	Fawcett; Robert Heath - -	18	171	80	74	209	344	128	252	—	101	—	—	—	—	13	122	—	—	1,494
11	21	Smith; Arthur Hamilton - -	18	168	—	—	291	447	123	44	—	285	—	—	—	—	61	58	—	—	1,477
12	57	Logan; Alexander Cochrane -	17	226	144	126	284	422	92	—	—	—	—	—	—	—	101	73	—	—	1,468
13	84	Bell; Matthew Denny - -	18	213	—	38	243	332	190	309	85	—	—	—	—	—	—	8	—	—	1,418

India Civil Service.—Examination of 1879.—Table of Marks.—Selected Candidates—*continued.*

Order of Merit.	No. in Examination.	NAME.	Age on 1st January 1879.	NUMBER OF MARKS OBTAINED.																	
				ENGLISH			Greek.	Latin.	French.	German.	Italian.	Mathematics.	NATURAL SCIENCE.				Logic.	Political Economy.	Sanskrit.	Arabic.	Total.
				Composition.	History.	Literature.							Chemistry.	Electricity and Magnetism.	Heat and Light.	Mechanical Philosophy and Astronomy.					
				Maximum Number of Marks.																	
				300	300	300	600	300	500	500	400	1,000	500	300	300	300	300	300	500	500	
14	140	Steinberg; Alfred Frederick	18	172	118	26	73	320	114	361	—	226	—	—	—	—	—	—	—	—	1,410
15	180	Grindlay; Walter	17	136	10	—	295	464	107	—	—	393	—	—	—	—	—	—	—	—	1,405
16	97	Shirres; Leslie Pittendrigh	18	142	—	—	100	369	—	—	—	609	—	—	—	121	50	—	—	—	1,391
17	159	Growse; Edward Frederick	18	193	110	114	232	416	155	—	155	—	—	—	—	—	—	—	—	—	1,375
18	151	Lloyd; Ernest Thomas	18	143	116	69	245	470	213	—	—	88	—	—	—	—	22	—	—	—	1,366
19	59	Richards; Augustus Fulton	18	185	26	51	309	468	40	49	—	177	—	—	—	—	59	—	—	—	1,364
20	103	Bewsher; James	17	127	37	78	197	302	—	—	—	615	—	—	—	0	—	—	—	—	1,356
21	63	Gruchy; John James	17	120	53	0	64	343	244	291	—	88	148	—	0	—	—	0	—	—	1,351
22	76	Temple; Henry Lacroix	17	176	70	84	—	75	—	—	—	536	137	—	—	60	101	111	—	—	1,350
23	120	Morison; William Thomson	18	117	—	33	342	562	64	—	—	179	—	—	—	0	—	—	—	—	1,317
24	64	Cardew; Alexander Gordon	17	202	144	120	156	311	119	182	—	—	—	—	—	—	76	—	—	—	1,310
25	101	Robinson; Frank Edward	18	162	144	61	78	191	77	—	—	281	182	—	65	—	0	48	—	—	1,294
26	96	Stuart; Harold Arthur	18	168	—	153	4	223	—	—	—	528	113	—	—	31	—	69	—	—	1,290
27	50	Evans; William	18	98	—	—	—	169	199	213	—	446	144	—	—	10	—	—	—	—	1,279
28	55	Heaton; Joseph John	18	195	122	65	—	0	—	—	—	630	180	—	—	37	43	—	—	—	1,272

OPEN COMPETITION OF JULY 1879.—TABLE OF MARKS.—CANDIDATES NOT SELECTED.

Order of Merit.	No. in Examination.	NUMBER OF MARKS OBTAINED.																	
		ENGLISH			Greek.	Latin.	French.	German.	Italian.	Mathematics.	NATURAL SCIENCE.				Logic.	Political Economy	Sanskrit.	Arabic.	Total.
		Composition.	History.	Literature.							Chemistry.	Electricity and Magnetism.	Heat and Light.	Mechanical Philosophy and Astronomy.					
		Maximum Number of Marks.																	
		300	300	300	600	800	500	500	400	1,000	500	300	300	300	300	300	500	500	
29	34	119	—	—	201	281	201	—	104	350	—	—	—	0	—	—	—	—	1,256
30	32	128	127	133	231	315	215	—	93	—	—	—	—	—	—	—	—	—	1,241
31	74	87	—	33	227	472	116	187	—	111	—	—	—	0	—	—	—	—	1,233
32	127	103	64	81	—	—	—	—	—	316	83	—	45	—	102	121	306	—	1,221
33	149	115	126	—	150	344	148	0	—	308	—	28	—	0	—	—	—	—	1,219
34	166	139	—	22	297	417	158	—	—	170	—	—	—	0	—	—	—	—	1,203
35	2	167	21	24	309	513	120	—	—	38	—	0	—	—	—	—	—	—	1,192
36	154	188	81	110	266	334	77	65	—	70	—	—	—	—	—	—	—	—	1,191
37	126	138	85	76	—	344	157	—	—	398	—	—	0	0	—	—	—	—	1,188
38	124	192	104	170	116	331	84	—	160	—	0	—	—	—	—	21	—	—	1,178
39	89	135	—	—	191	364	161	—	—	322	—	—	—	0	—	—	—	—	1,173
40	81	120	0	—	151	265	216	228	—	177	—	—	—	—	—	—	—	—	1,157
41	33	97	—	0	190	250	228	—	—	336	—	—	—	—	—	—	—	—	1,151
42	71	130	93	86	161	379	—	156	—	143	—	—	—	0	—	0	—	—	1,148
43	37	217	106	132	158	361	118	—	—	—	—	—	—	—	42	8	—	—	1,142

Open Competition of July 1879.—Table of Marks.—Candidates not selected—*continued*.

Order of Merit.	No. in Examination.	NUMBER OF MARKS OBTAINED.																	
		English			Greek.	Latin.	French.	German.	Italian.	Mathematics.	Natural Science.				Logic.	Political Economy	Sanskrit.	Arabic.	Total.
		Composition.	History.	Literature.							Chemistry.	Electricity and Magnetism.	Heat and Light.	Mechanical Philosophy and Astronomy.					
		Maximum Number of Marks.																	
		300	300	300	600	800	500	500	400	1,000	500	300	300	300	300	300	500	500	
44	112	189	145	130	266	371	27	—	—	13	—	—	—	—	—	—	—	—	1,141
	141	123	—	—	—	271	131	—	103	409	—	—	—	0	—	—	104	—	1,141
46	60	113	0	0	342	563	114	—	—	—	—	—	—	—	—	—	—	—	1,132
47	136	94	3	0	69	172	289	330	123	—	—	—	—	—	0	0	—	—	1,130
48	51	95	21	—	—	262	235	390	—	65	—	—	—	—	—	42	—	—	1,110
49	44	178	141	46	173	312	—	—	—	246	—	—	—	7	—	—	—	—	1,103
50	22	110	—	—	153	255	183	240	—	157	—	—	—	0	—	—	—	—	1,098
51	106	125	46	68	227	376	83	—	—	136	35	—	—	0	—	—	—	—	1,096
52	102	96	—	—	139	331	46	—	—	221	255	—	—	0	—	—	—	—	1,090
53	86	121	74	52	217	423	19	—	—	181	—	—	—	—	—	—	—	—	1,087
54	90	130	65	—	220	419	—	—	—	188	—	—	—	—	49	—	—	—	1,071
55	168	99	—	—	122	373	181	—	—	295	—	—	—	0	—	—	—	—	1,070
56	92	110	95	0	176	167	199	257	—	65	—	—	—	—	—	0	—	—	1,069
57	125	198	112	56	179	385	—	—	—	133	—	—	—	—	—	0	—	—	1,063
58	68	97	27	46	45	142	—	—	—	455	—	100	—	3	137	—	—	—	1,052
	54	162	—	93	186	167	106	—	56	282	—	—	—	0	—	—	—	—	1,052

Open Competition of July 1879.—Table of Marks.—Candidates not selected—*continued.*

Order of Merit.	No. in Examination.	NUMBER OF MARKS OBTAINED.																	
		ENGLISH			Greek.	Latin.	French.	German.	Italian.	Mathematics.	NATURAL SCIENCE.				Logic.	Political Economy	Sanskrit.	Arabic.	Total.
		Composition.	History.	Literature.							Chemistry.	Electricity and Magnetism.	Heat and Light.	Mechanical Philosophy and Astronomy.					
		Maximum Number of Marks.																	
		300	300	300	600	800	500	500	400	1.000	500	300	300	300	300	300	500	500	
60	46	110	74	1	268	423	141	0	19	—	—	—	—	—	—	0	—	—	1041
61	39	164	0	6	311	392	104	0	—	62	—	—	—	—	—	—	—	—	1039
62	67	111	—	—	—	316	122	—	—	361	75	—	—	49	—	—	—	—	1034
63	3	106	—	—	102	348	117	—	—	352	—	—	—	0	—	—	—	—	1025
64	41	102	21	—	252	296	123	—	—	111	102	—	0	—	—	—	—	—	1007
65	62	107	0	18	218	469	0	—	—	33	157	0	—	—	—	—	—	—	1002
66	69	107	—	—	175	310	141	—	—	234	—	—	—	0	—	—	—	—	967
67	10	157	—	73	—	253	180	—	—	236	—	—	—	7	48	8	—	—	962
68	43	100	—	—	239	390	13	—	—	210	—	—	—	0	—	—	—	—	952
69	169	134	—	21	—	—	190	227	—	304	—	74	—	1	—	—	—	—	951
70	1	84	—	—	—	135	168	—	—	534	27	—	—	0	—	—	—	—	948
71	18	148	50	76	190	442	6	—	—	27	—	—	—	—	—	—	—	—	934
72	163	123	—	16	206	453	57	—	—	77	—	—	—	—	—	—	—	—	932
73	40	139	116	101	—	160	122	225	51	—	—	—	—	—	—	0	—	—	920
74	121	198	76	31	99	289	66	—	—	106	—	—	—	—	18	39	—	—	913
75	148	150	55	98	—	258	128	—	—	198	—	0	21	—	—	—	—	—	908

Open Competition of July 1879.—Table of Marks.—Candidates not selected—*continued*.

Order of Merit.	No. in Examination.	NUMBER OF MARKS OBTAINED.																	
		ENGLISH			Greek.	Latin.	French.	German	Italian.	Mathematics.	NATURAL SCIENCE.				Logic.	Political Economy	Sanskrit.	Arabic.	Total.
		Composition.	History.	Literature.							Chemistry.	Electricity and Magnetism.	Heat and Light.	Mechanical Philosophy and Astronomy.					
		Maximum Number of Marks.																	
		300	300	300	600	800	500	500	400	1,000	500	300	300	300	300	300	500	500	
76	164	145	—	90	225	297	42	—	—	99	—	—	—	—	—	—	—	—	898
77	170	168	146	85	33	159	82	0	144	75	—	—	—	—	—	—	—	—	892
78	173	170	103	33	14	93	—	—	—	415	0	—	—	—	62	—	—	—	890
79	128	122	—	—	185	336	150	—	—	87	0	—	—	0	—	—	—	—	880
80	108	125	—	—	188	291	89	—	—	182	—	—	—	0	—	—	—	—	875
81	129	114	126	31	—	127	155	—	—	147	151	23	—	—	—	—	—	—	874
82	49	138	—	44	122	424	41	—	—	103	—	—	—	—	0	—	—	—	872
83	15	137	21	0	151	201	72	215	—	42	—	—	—	—	—	—	—	—	839
84	105	144	—	0	126	305	135	—	0	119	—	—	—	0	—	—	—	—	829
85	157	84	0	0	77	335	97	—	22	213	—	—	—	0	—	—	—	—	828
86	80	62	—	0	56	125	60	—	—	446	—	44	—	34	—	—	—	—	827
87	24	123	126	17	82	317	0	—	—	157	—	—	—	—	—	—	—	—	822
88	135	103	0	0	237	347	130	—	0	—	—	—	—	—	0	—	—	—	817
89	147	90	50	3	186	280	—	—	—	176	—	—	—	—	—	—	—	—	785
90	152	118	33	63	178	187	0	125	—	80	—	—	—	—	—	—	—	—	784
91	30	192	78	32	118	294	32	24	—	—	—	—	—	—	—	—	—	—	770

Open Competition of July 1879.—Table of Marks.—Candidates not selected—*continued*.

Order of Merit.	No. in Examination.	NUMBER OF MARKS OBTAINED.																	
		ENGLISH.			Greek.	Latin.	French.	German.	Italian.	Mathematics.	NATURAL SCIENCE.				Logic.	Political Economy	Sanskrit.	Arabic.	Total.
		Composition.	History.	Literature.							Chemistry.	Electricity and Magnetism.	Heat and Light.	Mechanical Philosophy and Astronomy.					
		Maximum Number of Marks.																	
		300	300	300	600	800	500	500	400	1,000	500	300	300	300	300	300	500	500	
92	47	99	96	21	157	336	28	—	—	21	—	—	—	—	—	0	—	—	758
93	172	135	70	54	139	124	102	112	—	—	—	—	—	—	—	—	—	—	736
94	181	78	—	28	242	380	—	—	—	—	—	—	—	—	—	—	—	—	728
95	17	100	11	0	118	193	0	—	—	89	182	—	0	—	0	31	—	—	724
96	175	140	—	74	112	204	—	120	—	56	—	—	—	—	—	—	—	—	706
97	9	120	34	40	—	0	39	—	—	246	225	—	—	0	—	—	—	—	704
98	165	108	0	0	166	282	38	—	—	93	—	—	—	—	—	—	—	—	687
99	146	52	—	—	56	310	4	—	—	262	—	—	—	0	—	—	—	—	684
100	178	130	2	0	14	191	52	—	—	232	61	—	—	—	—	—	—	—	682
101	20	96	31	10	47	165	226	—	105	—	—	—	—	—	—	—	—	—	680
102	16	140	103	54	130	127	53	—	—	—	—	—	—	—	59	—	—	—	675
103	145	98	—	—	110	186	99	—	11	152	—	—	—	0	—	—	—	—	656
	25	110	—	—	—	244	118	—	—	180	0	—	—	4	—	—	—	—	656
105	19	118	50	16	167	256	—	5	—	43	—	—	—	—	—	—	—	—	655
106	132	82	—	—	214	195	45	—	—	115	—	—	—	0	—	—	—	—	651

Open Competition of July 1879.—Table of Marks.—Candidates not selected—*continued.*

Order of Merit.	No. in Examination.	NUMBER OF MARKS OBTAINED.																	
		ENGLISH			Greek.	Latin.	French.	German.	Italian.	Mathematics.	NATURAL SCIENCE.				Logic.	Political Economy	Sanskrit.	Arabic.	Total.
		Composition.	History.	Literature.							Chemistry.	Electricity and Magnetism.	Heat and Light.	Mechanical Philosophy and Astronomy.					
		Maximum Number of Marks.																	
		300	300	300	600	800	500	500	400	1,000	500	300	300	300	300	300	500	500	
107	137	121	—	—	193	255	0	—	—	65	—	—	—	0	—	—	—	—	634
108	133	74	—	—	121	151	83	—	0	203	—	—	—	0	—	—	—	—	632
109	110	—	—	44	253	228	25	—	—	67	—	—	—	—	—	—	—	—	617
110	72	123	—	—	—	241	—	—	0	239	—	—	—	0	—	—	—	—	608
111	109	125	—	—	137	261	0	—	—	66	—	—	—	—	—	—	—	—	589
112	100	88	0	—	101	297	0	—	—	96	—	—	—	—	—	—	—	—	582
113	110	98	39	0	109	200	55	17	63	—	—	—	—	—	—	—	—	—	581
114	29	86	0	14	193	223	—	0	0	53	—	—	—	—	—	—	—	—	569
115	11	79	—	0	70	141	55	—	—	214	—	—	—	0	0	—	—	—	559
116	31	109	56	0	—	86	162	55	12	76	—	—	—	—	—	—	—	—	556
	167	102	55	48	142	153	0	—	—	56	—	—	—	—	—	—	—	—	556
118	70	94	16	0	0	199	—	—	—	238	—	—	—	—	—	—	—	—	547
119	38	132	98	23	—	0	94	84	56	59	—	—	—	—	—	—	—	—	546
120	85	117	—	—	—	0	220	—	24	158	—	—	—	0	—	—	—	—	519
	155	107	—	—	—	72	25	—	—	315	0	—	—	0	—	—	—	—	519

Open Competition of July 1879.—Table of Marks.—Candidates not selected—*continued.*

Order of Merit.	No. in Examination.	NUMBER OF MARKS OBTAINED.																	
		English			Greek.	Latin.	French.	German.	Italian.	Mathematics.	Natural Science.				Logic.	Political Economy	Sanskrit.	Arabic.	Total.
		Composition.	History.	Literature.							Chemistry.	Electricity and Magnetism.	Heat and Light.	Mechanical Philosophy and Astronomy.					
		Maximum Number of Marks.																	
		300	300	300	600	800	500	500	400	1,000	500	300	300	300	300	300	500	500	
122	83	191	—	81	—	0	89	31	—	112	—	—	—	—	—	—	—	—	504
123	161	60	4	30	—	—	—	0	—	282	—	0	0	—	75	44	—	—	495
124	65	93	34	33	—	35	53	—	—	119	121	—	0	—	—	—	—	—	488
125	142	98	—	—	54	172	98	—	6	57	—	—	—	0	—	—	—	—	485
126	115	88	—	—	132	146	65	—	—	49	—	—	—	—	—	0	—	—	480
127	73	94	36	—	—	0	205	85	—	57	0	—	—	0	—	—	—	—	477
128	171	79	—	—	—	31	98	—	—	189	76	—	—	—	—	—	—	—	473
129	179	106	0	0	0	195	69	0	—	97	—	—	—	—	—	—	—	—	467
130	5	133	—	—	59	170	52	—	—	46	—	—	—	—	—	—	—	—	460
131	4	58	0	0	—	—	0	—	—	359	13	—	—	25	—	—	—	—	455
132	87	119	26	0	0	70	41	—	—	181	—	—	—	—	—	—	—	—	437
133	118	150	12	108	—	50	0	0	—	115	—	—	—	—	0	0	—	—	435
134	13	78	15	—	—	19	76	78	—	60	106	0	—	—	—	0	—	—	432
	7	91	—	0	0	97	36	—	—	208	—	—	—	0	—	—	—	—	432
136	158	86	—	0	16	102	0	—	—	225	—	—	—	—	—	—	—	—	429

Open Competition of July 1879.—Table of Marks.—Candidates not selected—*continued.*

Order of Merit.	No. in Examination.	NUMBER OF MARKS OBTAINED.																	
		English			Greek.	Latin.	French.	German.	Italian.	Mathematics.	Natural Science.				Logic.	Political Economy	Sanskrit.	Arabic.	Total.
		Composition.	History.	Literature.							Chemistry.	Electricity and Magnetism.	Heat and Light.	Mechanical Philosophy and Astronomy.					
		Maximum Number of Marks.																	
		300	300	300	600	800	500	500	400	1,000	500	300	300	300	300	300	500	500	
137	160	92	—	0	0	115	—	—	—	212	—	0	0	—	0	—	—	—	419
138	23	39	0	0	105	184	65	0	—	13	—	—	—	—	—	—	—	—	406
	162	138	0	0	59	117	63	—	—	29	—	—	—	—	—	—	—	—	406
140	153	116	0	0	136	134	0	—	—	—	—	—	—	—	—	0	—	—	386
141	61	79	0	—	35	213	0	—	—	55	—	—	—	—	—	0	—	—	382
142	27	81	—	—	—	0	101	—	—	192	—	0	—	0	—	—	—	—	374
143	52	68	15	52	21	80	34	0	0	—	0	—	—	—	0	0	97	—	367
144	122	119	45	0	—	0	0	—	—	199	0	—	—	—	—	0	—	—	363
145	123	56	—	—	—	1	169	36	—	96	—	—	—	0	—	—	—	—	358
146	176	111	79	—	—	45	88	—	0	26	—	—	—	0	—	—	—	—	349
147	133	94	—	—	34	87	0	—	—	131	—	—	—	0	—	—	—	—	346
148	144	101	10	0	—	30	0	—	—	157	—	0	26	—	—	11	—	—	335
149	53	86	21	22	—	12	142	—	18	30	—	—	—	—	0	—	—	—	331
150	131	30	—	—	26	175	65	—	—	23	—	—	—	—	—	—	—	—	319
151	139	48	0	0	—	—	213	58	0	—	—	—	—	—	—	—	—	—	314

190402

Order of Merit.	No. in Examination.	NUMBER OF MARKS OBTAINED.																	
		ENGLISH.			Greek.	Latin.	French.	German.	Italian.	Mathematics.	NATURAL SCIENCE.				Logic.	Political Economy	Sanskrit.	Arabic.	Total.
		Composition.	History.	Literature.							Chemistry.	Electricity and Magnetism.	Heat and Light.	Mechanical Philosophy and Astronomy.					
		Maximum Number of Marks.																	
		300	300	300	600	800	500	500	400	1,000	500	300	300	300	300	300	500	500	
152	114	81	—	—	—	0	65	97	0	47	—	—	—	0	—	—	—	—	290
153	93	128	0	0	0	147	0	—	0	—	—	—	—	—	—	—	—	—	275
154	45	98	0	0	17	150	0	—	—	—	—	—	—	—	—	—	—	—	265
155	177	79	—	—	—	0	177	—	—	8	—	—	—	—	—	—	—	—	264
156	113	114	0	0	0	0	—	0	—	111	0	0	—	—	—	—	—	—	225
157	104	81	0	0	—	—	32	—	—	111	0	—	—	0	0	0	—	—	224
158	58	68	—	0	—	—	0	0	—	150	3	—	—	0	—	0	—	—	221
159	8	91	0	56	—	0	73	—	0	—	0	—	—	—	—	—	—	—	220
160	107	129	0	0	0	57	26	—	—	—	—	—	—	—	—	0	—	—	212
161	156	70	—	—	0	0	76	—	—	55	—	—	—	0	—	—	—	—	201
162	28	120	—	—	—	0	0	—	—	79	0	—	—	0	0	—	—	—	199
163	95	115	0	—	0	17	49	—	0	—	—	—	—	—	—	—	—	—	181
164	77	40	—	—	—	40	0	—	—	100	0	—	—	0	—	—	—	—	180
165	134	67	—	0	—	—	—	—	—	109	0	—	—	—	—	—	—	—	176
166	36	70	—	—	—	10	0	—	—	90	0	—	—	0	—	—	—	—	170

Open Competition of July 1879.—Table of Marks.—Candidates not selected—*continued*.

Order of Merit.	No. in Examination.	NUMBER OF MARKS OBTAINED.																	
		English			Greek.	Latin.	French.	German.	Italian.	Mathematics.	Natural Science.				Logic.	Political Economy	Sanskrit.	Arabic.	Total.
		Composition.	History.	Literature.							Chemistry.	Electricity and Magnetism.	Heat and Light.	Mechanical Philosophy and Astronomy.					
		Maximum Number of Marks.																	
		300	300	300	600	800	500	500	400	1,000	500	300	300	300	300	300	500	500	
167	98	38	—	—	0	28	0	—	—	101	—	—	—	0	—	—	—	—	167
168	78	83	—	—	0	0	20	—	—	52	—	—	—	—	—	—	—	—	155
169	148	20	—	—	—	0	0	—	—	125	0	—	—	0	—	—	—	—	145
170	99	90	0	0	0	0	0	—	—	47	—	—	—	0	—	—	—	—	137
171	35	72	—	—	0	0	0	—	—	52	—	0	—	0	—	—	—	—	124
172	48	—	—	—	—	—	8	0	—	95	0	—	—	—	—	—	—	—	103
173	136	75	0	0	—	—	0	—	—	18	—	—	—	—	—	—	—	—	93
174	75	62	0	0	0	0	0	0	0	—	—	—	—	—	—	0	—	—	62

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CIVIL SERVICE COMMISSION.

INDIA CIVIL SERVICE.

EXAMINATION PAPERS

SET AT AN OPEN COMPETITION FOR

THE CIVIL SERVICE OF INDIA,

HELD UNDER THE DIRECTIONS OF THE CIVIL SERVICE COMMISSIONERS IN JUNE 1880;

TOGETHER WITH

REGULATIONS AND A TABLE OF THE MARKS OBTAINED.

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Open Competition of June 1880.

REGULATIONS, &c.

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CIVIL SERVICE OF INDIA.

Open Competition of June 1880.

REGULATIONS, &c.

Q 1762. Wt. 8862. A 2

Regulations for the Open Competition of June 1880.

Regulations.

N.B.—The Regulations are liable to be altered in future years.

1. On June 15th, 1880, and following days, an Examination, open to all qualified persons, being natural-born subjects of Her Majesty, will be held in London. Not fewer than 27 Candidates will be selected, if so many shall be found duly qualified; viz., 18 for the Presidency of Bengal, [10 for the Upper and 8 for the Lower Provinces,] 4 for that of Madras, and 5 for that of Bombay. (*a*)

2. Any person desirous of competing at this Examination must produce to the Civil Service Commissioners, before the 1st of April, 1880, evidence showing:—

(i.) That he is a natural-born subject of Her Majesty.

(ii.) That his age will be above seventeen years on the 1st of June, 1880, and under nineteen years on the 1st January, 1880. (*b*.) [*N.B.—In the case of Natives of India this must be certified by the Government of India, or of the Presidency or Province in which the Candidate may have resided.*]

(iii.) That he has no disease, constitutional affection, or bodily infirmity unfitting him, or likely to unfit him, for the Civil Service of India. (*c*)

(iv.) That he is of good moral character. (*c*)

He must also pay such fee as the Secretary of State for India may prescribe. (*d*)

3. Should the evidence upon the above points be *primâ facie* satisfactory to the Civil Service Commissioners, the Candidate will, upon payment of the prescribed fee, be admitted to the Examination. The Commissioners may, however, in their discretion, at any time prior to

---

(*a*) Notice of the days and place of Examination will be sent to each Candidate about the end of May.

(*b*) At subsequent competitions Candidates will be required to be above 17 and under 19 on the 1st June of year in which the competition is held.

(*c*) Evidence of health and character must bear date not earlier than the 1st March, 1880.

(*d*) The Fee will be £5, payable by means of a special stamp according to instructions which will be communicated to Candidates.

the grant of the Certificate of Qualification herein-after referred to, institute such further inquiries as they may deem necessary; and if the result of such inquiries, in the case of any Candidate, should be unsatisfactory to them in any of the above respects, he will be ineligible for admission to the Civil Service of India; and if already selected, will be removed from the position of a Probationer.

4. The Examination will take place only in the following branches of knowledge:—

	Marks.
(*e*) English Composition	300
(*f*) History of England—including a period selected by the Candidate	300
(*f*) English Literature—including books selected by the Candidate	300
Greek	600
Latin	800
French	500
German	500
Italian	400
(*e*)(*g*) Mathematics (pure and mixed)	1,000
Natural Science: that is, the Elements of any two of the following Sciences, viz.:— Chemistry, 500: Electricity and Magnetism, 300; Experimental Laws of Heat and Light, 300: Mechanical Philosophy, with outlines of Astronomy, 300.	
Logic	300
Elements of Political Economy	300
(*h*) Sanskrit	500
(*h*) Arabic	500

Candidates are at liberty to name, before April 1st, 1880, any or all of these branches of knowledge. No subjects are obligatory. (*i*)

5. The merit of the persons examined will be estimated by marks; and the number set opposite to each branch in the preceding regulation denotes the greatest number of marks that can be obtained in respect of it.

6. The marks assigned to Candidates in each branch will be subject to such deduction as the Civil Service Commissioners may deem necessary, in order to secure that "a Candidate be allowed no credit at all for taking up a subject in which he is a mere smatterer." (*e*)

(*e*) Marks assigned in English Composition and Mathematics will be subject to no deduction.

(*f*) A considerable portion of the marks for English History and Literature will be allotted to the work selected by the Candidate. In awarding marks for this, regard will be had partly to the extent and importance of the periods or books selected, but chiefly to the thoroughness with which they have been studied.

(*g*) The Examination will range from Arithmetic, Algebra, and Elementary Geometry, up to the elements of the differential and integral calculus, including the lower portions of applied Mathematics.

(*h*) The standard of marking in Sanskrit and Arabic will be determined with reference to a high degree of proficiency, such as may be expected to be reached by a Native of good education.

(*i*) Applications for leave to alter or to add to the list of subjects named will not be entertained unless received on or before the 15th of May, 1880.

7. The Examination will be conducted on paper and *viva voce*, as may be deemed necessary.

8. The marks obtained by each Candidate, in respect of each of the subjects in which he shall have been examined, will be added up, and the names of the several Candidates who shall have obtained, after the deduction above mentioned, a greater aggregate number of marks than any of the remaining Candidates will be set forth in order of merit, and such Candidates shall be deemed to be selected Candidates for the Civil Service of India, provided they appear to be in other respects duly qualified. Should any of the selected Candidates become disqualified, the Secretary of State for India will determine whether the vacancy thus created shall be filled up or not. In the former case, the Candidate next in order of merit, and in other respects duly qualified, shall be deemed to be a selected Candidate. A selected Candidate declining to accept the appointment which may be offered to him will be disqualified for any subsequent competition.

9. Selected Candidates, before proceeding to India, will be on probation for two years, during which time they will be examined periodically, with a view of testing their progress, in the following subjects:—*

	Marks.
1. Law	1,250
2. Classical Languages of India—	
Sanskrit	500
Arabic	400
Persian	400
3. Vernacular Languages of India (each)	400
4. The History and Geography of India	350
5. Political Economy	350

In these Examinations, as in the open competition, the merit of the Candidates examined will be estimated by marks, and the number set opposite to each subject denotes the greatest number of marks that can be obtained in respect of it at any one Examination. The Examination will be conducted on paper and *viva voce*, as may be deemed necessary. The last of these Examinations will be held at the close of the second year of probation, and will be called the "Final Examination," at which it will be decided whether a selected Candidate is qualified for the Civil Service of India. At this Examination Candidates will be permitted to take up any one of the following branches of Natural Science, viz.—Botany, Geology, and Zoology, for which 350 marks will be allowed.

10. Any Candidate who, at any of the periodical Examinations, shall appear to have wilfully neglected his studies, or to be physically incapacitated for pursuing the prescribed course of training, will be liable to have his name removed from the list of selected Candidates.

11. The selected Candidates who, at the Final Examination, shall be found to have a competent knowledge of the subjects specified in Regulation 9, and who shall have satisfied the Civil Service Commissioners of their eligibility in respect of nationality, age, health, and character, shall be certified by the said Commissioners to be entitled to be appointed to the Civil Service of India, provided they shall comply with the regulations in force at the time for that Service.

---

* Full instructions as to the course of study to be pursued will be issued to the successful Candidates as soon as possible after the result of the open competition is declared.

12. Applications from persons desirous to be admitted as Candidates are to be addressed to the "Secretary to the Civil Service Commissioners, London, S.W.," from whom the proper form for the purpose may be obtained.

September, 1879.

The Civil Service Commissioners are authorised by the Secretary of State for India in Council to make the following announcements :—

(1.) *Selected Candidates will be permitted to choose,* according to the order in which they stand in the list resulting from the open competition as long as a choice remains, the Presidency (and in Bengal the Division of the Presidency) to which they shall be appointed, but this choice will be subject to a different arrangement should the Secretary of State or the Government of India deem it necessary.*

(2.) *The Probationers, having passed the necessary Examinations, will be required to report themselves to their Government in India not later than the close of December*, 1883.

(3.) *The seniority in the Civil Service of India of the selected Candidates shall be determined according to the Order in which they stand on the list resulting from the Final Examination.*

(4.) *An allowance of* £150 *a year will be given during each of the two years of their probation to all Candidates who pass their probation at one of the Universities or Colleges which have been approved by the Secretary of State, viz., the Universities of Oxford, Cambridge, Glasgow, Edinburgh, St. Andrew's, and Aberdeen, Trinity College, Dublin, University College, London, and King's College, London, provided such Candidates shall have passed the required Examinations to the satisfaction of the Civil Service Commissioners, and shall have complied with such rules as may be laid down for the guidance of selected Candidates.*

(5.) *All selected Candidates will be required, after having passed the first periodical Examination, and before receiving their first half-yearly allowance, to attend at the India Office for the purpose of entering into an agreement binding themselves, amongst other things, to refund in certain cases the amount of their allowance in the event of their failing to proceed to India. A surety will be required.*

(6.) *After passing the Final Examination, each Candidate will be required to attend again at the India Office, with the view of entering into covenants. The stamps payable on these documents amount to* £1.

(7.) *Candidates rejected at the Final Examination of* 1882 *will in no case be allowed to present themselves for re-examination.*

NOTE.—The Civil Service Commissioners have been requested to inform Candidates for the Indian Civil Service, that "in the event of their being appointed to the Service, a clause will be introduced into their Covenants, by which they will bind themselves to agree to such Regulations for the provision of pensions for their families as may be approved by the Secretary of State for India in Council."

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* This choice must be exercised immediately after the result of the open competition is announced, on such day as may be fixed by the Civil Service Commissioners.

Memorandum.

For the guidance of Candidates who may have a difficulty in making their selections for special study under the heads of English History and Literature, the following lists are given as indicating the character and amount of reading that would be regarded as satisfactory.

HISTORY OF ENGLAND.

Any one of the following periods, to be studied generally in "Bright's History," and specially in portions, selected by the Candidate, of the Text books named—

1. HENRY II. to EDWARD III., A.D. 1154–1377.—Stubbs' Select Charters; Stubbs' Constitutional History of England.
2. THE TUDORS, A.D. 1485–1603.—Hallam's Constitutional History of England; Froude's History of England.
3. THE STUARTS, A.D. 1603–1714.—Hallam's Constitutional History of England; Macaulay's History of England.
4. A.D. 1714–1805.—Lord Stanhope's History; Sir T. E. May's Constitutional History; *either* Massey's Reign of George III. *or* Lord Stanhope's Life of Pitt.

ENGLISH LITERATURE.

POETRY.

SHAKESPEARE.—Three plays, one from each of the following groups:
(*a*) Macbeth, Othello, Lear, Hamlet.
(*b*) Coriolanus, Julius Cæsar, King John, Henry V.
(*c*) Tempest, Merchant of Venice, Romeo and Juliet, As You Like It.

And any two of the following:—

1. CHAUCER.—Prologue to the Canterbury Tales, with the Prioress' Tale, and the Clerk's Tale; *or* SPENSER.—Faerie Queene, Books 1 and 2.
2. MILTON.—First four books of Paradise Lost, *or* Paradise Regained, *or* Comus and Samson Agonistes.
3. DRYDEN.—Absalom and Achitophel, and The Hind and Panther.
4. POPE.—Essay on Criticism; with *either* imitations of Satires and Epistles of Horace, *or* Essay on Man.
5. GRAY.—Poems.

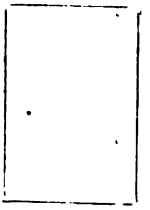
PROSE.

BACON.—Essays, *or* Advancement of Learning.

And any two of the following:—

1. MILTON.—Areopagitica; *and* LOCKE.—On the conduct of the understanding.
2. CLARENDON.—History of the Rebellion, from the Treaty between the King and the Parliament, at the end of Book VI., to the Death and Character of Falkland in Book VII.; and DE FOE.—Memoirs of a Cavalier (ch. viii. to the end).
3. ADDISON.—Selections (Clarendon Press Series), Parts 1, 2, 3, 6, and 7.
4. JOHNSON.—"Six Chief Lives of the Poets," viz.:—of Milton, Dryden, Swift, Addison, Pope, and Gray; with Macaulay's Biography of Johnson.
5. BURKE.—Reflexions on the French Revolution; *or* Appeal from New to Old Whigs, with Speech on American Taxation.
6. MACAULAY.—Essays on Addison, Byron, Walpole, Mackintosh, Temple, and Madame D'Arblay.

Civil Service Stamp or Stamps to the value of 5*l.* to be placed here.



See Instructions below.**

Order for Examination.

Mr.

being a Candidate for the Civil Service of India, under the Regulations for the Open Competition of June and July, 1880;

It is ordered that he be admitted to the Competitive Examination which is fixed to commence in the Arena, Royal Albert Hall, Kensington, on Tuesday, 15th June 1880, and following days.

By Order of the Civil Service Commissioners.

HORACE MANN,
Secretary.

The Examination will commence each day at 10 *o'clock precisely.*

*** This Order must be produced on the first day of the Examination, bearing a* Civil Service *Stamp or Stamps (none other will be admitted) of the value of* 5*l. on the space indicated. Such Civil Service Stamps may be procured at the following places, viz.:*

The Office of the Inland Revenue, Somerset House, Strand.
The Post Office, 12, *Parliament Street, Westminster.*
Mr. Edward Stanford's, 55, *Charing Cross.*

Candidates are recommended to obtain the Stamps before the first day of the Examination.

To meet the convenience of Candidates who desire stamps to be sent by post, Mr. Stanford will forward them on receipt of a Post Office Order for the value, with 3*d. added for Registration and Postage.*

Notices.

1. This paper should be carefully preserved, and produced when required during the course of the Examination.
2. It is requested that the Candidate will acknowledge the receipt of this paper by writing his name on the outside of the enclosed envelope, and returning it through the post.
3. It is requested that any Candidate intending to withdraw will give early notice of such intention, and return this paper.
4. On the first day of the Examination, Candidates will be required to state on a form which will be placed before them their addresses during the Examination, and they are requested thereafter to keep the Commissioners informed of all changes in their address until they have received the announcement of the result of the Examination.
5. The result of the Examination will be communicated by letter to each Candidate, probably about the end of July. The successful Candidates will be required to attend in London, ***immediately after this announcement***, for the purpose of being medically examined, of exercising their choice of Presidency, and of receiving instructions as to the special studies to be pursued during their two years of probation.

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6. Candidates will be required to leave their hats, overcoats, umbrellas, and any books or papers which they may have brought with them in the room provided for this purpose, bofore proceeding to the Examination Room.
7. The Examination on paper will in each case begin at the hour indicated in the following Time Table, but the door of the Examination Room will be kept open for half an hour afterwards, in order that Candidates may not suffer from accidental delays. Candidates arriving after the expiration of that half hour will not be admitted.
8. No Candidate will be allowed to quit the Examination Room on any day until the expiration of half an hour from the time fixed for the commencement of the Examination.
9. The number in the margin (and *not* the name of the Candidate) must be placed outside each book sent in to the Examiners.
10. No Candidate who has left the Examination Room during the hours assigned to paper work will be permitted to return to the paper which he has quitted.
11. Candidates wishing for explanation of the meaning of any of the questions before them may apply to the Superintendent of the Examination Room. With this exception, perfect silence is to be preserved in the Examination Room; and any Candidate guilty of disorderly or improper conduct will be liable to be excluded from the Examination.
12. Any Candidate detected, in the Examination Room, in the possession of a book or manuscript brought with him for his assistance, or in copying the papers of any other Candidate, or in attempting to give or obtain assistance of any description, will be regarded as disqualified, and his name will be removed from the List.

CIVIL SERVICE COMMISSION,
CANNON ROW, LONDON, S.W.,
May, 1880.

Time Table.

Place.	Day.	Hour.	Subject.
The Royal Albert Hall, Kensington. (Entrance on the west side.)	Tuesday, 15th June	10 A.M. to 1 P.M. 2 P.M. to 5 P.M.	Translation from Latin. Translation into Latin.
	Wednesday, 16th June	10 A.M. to 1 P.M. 2 P.M. to 5 P.M.	Translation from Greek. Translation into Greek.
	Thursday, 17th June	10 A.M. to 1 P.M. 2 P.M. to 5 P.M.	English History (1). English History (2).
	Friday, 18th June	10 A.M. to 1 P.M. 2 P.M. to 5 P.M.	English Literature (1). English Literature (2).
	Saturday, 19th June	10 A.M. to 1 P.M. 2 P.M. to 5 P.M.	English Composition (1). Mechanical Philosophy.
	Monday, 21st June	10 A.M. to 1 P.M. 2 P.M. to 5 P.M.	English Composition (2). Arithmetic and Algebra.
	Tuesday, 22nd June	10 A.M. to 1 P.M. 2 P.M. to 5 P.M.	Geometry. Pure Mathematics (1).
	Wednesday, 23rd June	10 A.M. to 1 P.M. 2 P.M. to 5 P.M.	Pure Mathematics (2). Pure and Mixed Mathematics: (Easy Problems).
	Thursday, 24th June	10 A.M. to 1 P.M. 2 P.M. to 5 P.M.	Statics and Dynamics. Mixed Mathematics (Higher).
	Friday, 25th June	10 A.M. to 1.30 P.M. 2.30 P.M. to 5.30 P.M.	French. Chemistry Paper.
The London University, Burlington Gardens.	Saturday, 26th June	10 A.M. to 1 P.M. 2 P.M. to 5 P.M.	Practical Chemistry.
The Royal Albert Hall.	Monday, 28th June	10 A.M. to 1 P.M. 2 P.M. to 5.30 P.M. 2 P.M. to 5 P.M.	Political Economy. German. Sanskrit (1).
	Tuesday, 29th June	10 A.M. to 1 P.M. 2 P.M. to 5 P.M. 2 P.M. to 5.30 P.M.	Logic. Heat and Light. Italian.
	Wednesday, 30th June	10 A.M. to 1 P.M. 2 P.M. to 5 P.M.	Electricity and Magnetism. Sanskrit (2).

*** There will be viva voce Examinations in every subject (except English Composition).

The Oral Examinations in Modern Languages being intended as colloquial tests, no marks will be given at them to Candidates who are not able to converse. If any gentleman wishes to decline these colloquial tests, he is requested to communicate at once with "The Director of Examinations, Civil Service Commission, London, S.W."

CIVIL SERVICE OF INDIA.

Open Competition of June 1880.

EXAMINATION PAPERS.

Examination Papers.

ENGLISH COMPOSITION. (1.)

H. R. FRANCIS, Esq., and J. R. DASENT, Esq.

Saturday, 19th June 1880. 10 A.M. to 1 P.M.

Write an Essay on *one* of the following subjects:

1. Political morality, past and present.
2. Letter writing, past and present.
3. Good nature and good temper, their difference and comparative value.

N.B.—*Candidates are desired to bear in mind that their exercises will be valued according to the quality rather than the quantity of what they write.*

ENGLISH COMPOSITION. (2.)

C. KNIGHT WATSON, Esq., M.A.

Monday, 21st June. 10 A.M. to 1 P.M.

1. Give any general rules as to the arrangement (1) of words, (2) of clauses in a sentence, (3) of sentences in a paragraph.
2. What are the elements which constitute Vivacity of Style? Which of the parts of the speech has been called "the most unfriendly to vivacity," and on what grounds?
3. Give as many examples as you can of words which have (1) widened their meaning, and of words which have (2) narrowed their meaning, respectively.
4. Paraphrase the following passage:—

SEB. But for your conscience?
ANT. Ay, Sir; where lies that? if 'twere a kibe,
'Twould put me to my slipper: but I feel not
This deity in my bosom: twenty consciences

That stand 'twixt me and Milan, candid be they
And melt, ere they molest! Here lies your brother,
No better than the earth he lies upon,
If he were that which now he's like, that's dead;
Whom I, with this obedient steel, three inches of it,
Can lay to bed for ever; whiles you, doing thus,
To the perpetual wink for aye might put
This ancient morsel, this Sir Prudence, who
Should not upbraid our course. For all the rest,
They'll take suggestion as a cat laps milk;
They'll tell the clock to any business that
We say befits the hour.

ENGLISH HISTORY. (1.)

General Paper.

OSCAR BROWNING, Esq.

Thursday, 17th June 1880. 10 A.M. to 1 P.M.

1. Give an account of the administration of Dunstan.
2. What difficulties had Henry I. in securing his authority as King?
3. What were the main points in dispute between Simon de Montfort and Henry III.?
4. Give an account of the events which led to the Treaty of Troyes.
5. How did the Houses of York and Lancaster differ in their principles of government?
6. Describe the career of Thomas Cromwell.
7. In what manner did Charles I. attempt to govern without a parliament?
8. Give an account of the Cabal Ministry.
9. Describe the reconquest of Ireland under William III.
10. Explain the events connected with the Triple Alliance and the Quadruple Alliance in the reign of George I.
11. What was the position of the Whigs at the accession of William Pitt to power in 1783?
12. What is your estimate of Mr. Canning as a statesman?

ENGLISH HISTORY. (2.)

Rev. J. F. BRIGHT.

Thursday, 17th June 1880. 2 P.M to 5 P.M.

[*Each Candidate is requested to name at the head of his paper the period which he has selected. No marks will be given for answers to questions not included in the stated period.*]

I.—(1154—1377.)

1. Trace the history of the institution of juries.
2. "The unity of the nation was completed under Henry II. and his sons." Explain and illustrate these words.
3. Describe accurately the circumstances which led to the drawing up of the Constitutions of Clarendon. Examine the Constitutions as a part of a general scheme of administrative reform.
4. Examine the foreign connections of Henry II. with a view to discover whether he had any fixed line of policy, and whether they produced any permanent result upon the foreign policy of England.
5. What difference may be discerned in the political principles which guided the chief statesmen of Henry II. and Henry III.?
6. Show the influence of hereditary politics in the great constitutional quarrels of the 13th and 14th centuries, following with some accuracy the history of one or two great families.
7. Illustrate from the history of Ireland in the reigns of Edward II. and Edward III. the general character of the English government in that country.
8. Discuss the character of the Articles known as "De Tallagio non concedendo" of 1297.
9. Compare the Provisions of Oxford with the Ordinances of 1310 and 1311.

II.—(1485—1603.)

1. Describe the origin and jurisdiction of the Courts of Star Chamber and High Commission.
2. Sketch the policy of Henry VIII. towards Scotland, and trace its results.
3. Write a brief account of Sir Thomas More, Latimer, and Cranmer, as illustrating the different forms taken by the Reforming spirit of the time.
4. What great questions of foreign and domestic policy were left unsettled by Henry VIII.? What became of them in the hands of Somerset?

5. Account for the prevalence of vagrancy in the reigns of Henry VIII. and Edward VI. What measures were taken for its suppression?

6. "The foreign policy of the Tudors was directed towards keeping England independent of those continental influences which had proved so disastrous during the Wars of the Roses." Prove this, and illustrate it from the results of Mary's exceptional policy.

7. Show how far the position of Elizabeth as the champion of European Protestantism was due to deliberate policy, and how much to the force of circumstances.

8. Trace the rise of the Puritans in the reign of Elizabeth.

9. Explain and illustrate Elizabeth's view of the position of Parliament.

III.—(1603—1714.)

1. Give a brief account of the public life of the Duke of Buckingham.

2. Point out as far as possible the geographical position, and estimate the resources, of the two Parties at the opening of the Civil War.

3. Illustrate from the chief efforts at negotiation during the war the hopes entertained by Charles at different periods of the contest.

4. Compare in their constitutional aspects the impeachments of Strafford, Clarendon, and Danby.

5. Give some of Clarendon's merits and defects as a Minister.

6. By what steps did James II. alienate, 1st, the people? 2nd, the Church; and 3rd, the nobility?

7. What means of undue influence were left in the hands of the king at the Revolution? What attempts were made to restrict it, and with what result?

8. Explain the great financial measures of the reign of William III.

9. What charges are usually alleged against the character of Marlborough? Are any of them capable of refutation?

IV.—(1714—1805.)

1. Show from his relations with his colleagues Sir Robert Walpole's intolerance of rivalry.

2. Describe with some detail the events of the Jacobite insurrection of 1745.

3. How were English interests served by the part taken by the country in the Seven Years War?

4. Give instances of the attempt of George III. to establish personal rule.

5. What points of general or constitutional interest are involved in the various quarrels between Wilkes and the Parliament?

6. Show the evils of the state of the Representation in the 18th century, and explain the efforts made to reform it.

7. What were the chief repressive measures with which Pitt opposed what he considered the revolutionary spirit of the people?

8. Explain the intended policy of Pitt which led to what is known as the Russian Armament in 1791.

9. What was the condition of Ireland which induced the English Ministry to regard a legislative union as a matter of necessity?

ENGLISH LITERATURE. (1.)

CHARLES ELTON, Esq., M.A.

Friday, 18th June 1880. 10 A.M. to 1 P.M.

1. Give a general account of Anglo-Saxon poetry, illustrating your answer with reference to the Lay of Beowulf, the Traveller's Song, and the patriotic poems inserted in the Anglo-Saxon Chronicle.

2. Describe briefly the nature of the early English miracle-plays and shepherds-plays. How far would it be correct to attribute to them the origin of the modern drama?

3. Classify the principal English Essay-writers, and trace the connection of this form of literature with journalism.

4. What works would you select as the best examples of the English Historical Romance? Estimate the value of this form of literature.

5. To what extent have fable and allegory been employed by the principal English writers?

6. Discuss the effect of Puritanism upon English poetry.

7. Describe the scope and influence of the following works:—The Fable of the Bees, The Tale of a Tub, *Vindiciæ Gallicæ*, *Encomium Moriæ*, The Prelude, The Deserted Village.

8. Give an account of the principal English Books of Travel, with special reference to the writings of the age of Elizabeth and of the 18th century.

9. Contrast the lyrical writings (*a*) of Gray and Burns, and (*b*) Keats and Byron.

10. Classify and describe the principal writings of the modern English Humourists. Illustrate your answer by references to the works of Sterne, Lamb, and Thackeray.

ENGLISH LITERATURE. (2.)

Rev. T. H. L. LEARY, D.C.L.

Friday, 18th June. 2 P.M. to 5 P.M.

[N.B.—You are expected to confine your answers to the questions relating to the works which you have selected. Your remarks should be illustrated by quotations from or distinct references to the passages on which they are founded, as credit will be given for knowledge in proportion as it appears to be derived *at first hand from your own reading of the works.*]

1. Describe the chief qualities of Shakespere's *humour*, and compare it with that of any other poet. To what extent and for what purpose does it enter into his tragedies? Quote instances.

2. Describe, as much as possible in Shakespere's words, the main features of any *two* of the following characters:—Brutus, Lady Macbeth, Shylock, Hamlet, Rosalind, Coriolanus,. King Lear, Othello, Caliban, Constance, Romeo, and Falstaff.

3. Examine and illustrate by quotations the statement that "Shakespere gives us a living picture of all the slight and secret artifices by which a feeling steals into our souls, of all the imperceptible advantages which it there gains, of all the stratagems by which it makes every other passion subservient to itself, until it becomes the sole tyrant of our desires and aversions."

4. Compare Shakespere's treatment of Nature with that of Milton, Spenser, Gray, and Wordsworth.

5. Compare Shakespere with Chaucer as a delineator of character.

6. Explain the following passages, name the speaker, and the play in which they occur, and comment on the words italicised:
   (1.) *Signed* in thy *spoil*, and crimsoned in thy *lethe*.
   (2.) And see my wealthy *Andrew docked* in sand.
   (3.) If trembling I *inhabit* then *protest* me
   The baby of a girl.
   (4.) Well, God '*ild* you. They say the *owl was a baker's daughter*.
   (5.) You'll be whipped for *taxation* one of these days.
   (6.) On a *dissension* of a *doit* break out.
   (7.) O *indistinguished space* of woman's will.
   (8.) "Steal by line and level" is an excellent *pass* of *pate*.
   (9.) *Defeat* thy *favour* with an *usurped* beard.
   (10.) I am too high born to be *propertied*.

7. What is the *plan* of Chaucer's Canterbury Tales? To what extent is it original? What is the *purpose* of the Prologue? Quote from it the description of the Prioress and the Clerke, and point out the harmony of their tales with their characters.

8. Give the outlines of the Clerke's Tale as much as possible in Chaucer's words, and the source from which he derived it. Under what modern form has the Nonne Preste's Tale appeared? Trace its origin.

9. (1) Examine the statement that Chaucer is mediæval in tricks of style and turns of phrase. (2) Account for and give examples of his dualism of language. (3) Explain the following passages, give the context, and the tale in which they occur, and comment on the words italicised :—

   (1.) *Ne maked* him a *spiced* conscience.
   (2.) Fro day to day, til he *coude* it by rote.
   (3.) *Us* thoughte it *nas nat* worth to make it *wys*.

10. Discuss the merits and demerits of Spenser's Faerie Queene as an allegorical poem. What is the meaning of the allegory? To what sources was the poet indebted for plot, characters, metrical form?

11. Compare Milton and Spenser as descriptive poets in their treatment of the *supernatural* and of the *brute* creation.

12. Criticise the statement that Milton is not a *picturesque* but a *musical* poet.

13. Describe briefly the purpose, plan, and metrical form of any one of the following works : Paradise Lost, Paradise Regained, Comus, Samson Agonistes, Il Penseroso, and Lycidas ; stating to what special class of poetry you assign it, and what you regard as its special merit.

14. What are the most marked characteristics of Milton's Prose? Distinguish it from the prose of Bacon, Swift, Addison, Dr. Johnson, Burke, and Macaulay. Quote specimens from the *Areopagitica ;* and state Milton's object in writing this treatise, and its value.

15. What is Dryden's own account of his "Absalom and Achitophel" and of his "Hind and the Panther"? How far is he self-consistent? State his aim in each of these satires, and describe "Amiel" and "the Panther" as much as possible in the poet's words. State what is represented by each of these characters.

16. Specify the qualities of Pope as a satirist, and compare his satire with that of Chaucer and Dryden.

17. What were Pope's aims (1) in his Essay on *Criticism* and (2) in the Essay on *Man*, and what were the sources from which he drew? Apply to any of Pope's poems his own canons of criticism.

18. Examine the objections taken to Gray's Elegy in a Country Churchyard. Criticise his treatment of the passions, and compare it with that of other poets. What is Gray's distinguishing excellence? Illustrate by quotations.

19. Criticise the statement that "the works of Bacon afford very little food for ordinary human feelings, and all the pleasure we gain from them is founded on their intellectual excellence. Quote passages in illustration.

20. Give as much as possible in Bacon's own words the substance of one of the following essays :—*Revenge, Love, Envy*, and *Anger*, and illustrate it, (1) from Bacon's *antitheta*, and (2) from any of the English poets.

21. Criticise Bacon's treatment of *Atheism*, the *Schoolmen*, and *Poetry* either in his Essays, or in his Advancement of Learning. Give his account of the learning of Alexander and Julius Cæsar.

22. Explain the allusions in the following passages of Bacon's Essays. Give the context where they occur, and comment on the words italicised :—
    (1.) *Silenus* was *gravelled* and out of countenance.
    (2.) There is a master of scoffing, that in his catalogue of books of a *feigned* library . . .
    (3.) The *parable* of Pythagoras is dark but true.

23. What was Locke's design in his Conduct of the Understanding? How does he show (1) that ideas in themselves are neither true nor false, (2) that ideas are false in certain relations. Examine his views.

24. Give Dr. Johnson's estimate of Addison as a poet, and compare his criticism of the simile of the Angel in the Campaign with that of Macaulay.

25. Discuss Dr. Johnson's estimate of Swift's style and originality, and of Milton's blank verse; and criticise his comparison of Dryden and Pope.

26. Comment on Macaulay's description of Addison's *humour*. Enumerate the chief critical papers of Addison, and specify their merits, with quotations.

27. What is Macaulay's critical estimate of Dr. Johnson's "*London*," "*The Vanity of Human Wishes*," and his edition of Shakespere?

28. Discuss Macaulay's criticism on "the dramatic unities," on Byron's descriptive powers, and on Walpole's political character.

29. Examine the statement that "Burke's style consists of the accumulated spoils of many languages and of all ages," and point out the merits and demerits, from a political and literary stand-point, of Burke's Reflection on the French Revolution. Quote passages in illustration.

30. Give Burke's account of the "*real* rights of men" and of the connexion between Religion and Policy in a State.

31. What was Burke's purpose and his line of argument in his appeal from New to Old Whigs?

32. What is the historical value of Clarendon's History? To what is our interest chiefly drawn by the writer?

33. Compare Clarendon's style with that of Defoe, and give Clarendon's character of the Earl of Salisbury, of the Earl of Warwick, and of the Earl of Manchester. At what juncture of the history are these characters drawn?

34. To what tricks of style does Defoe resort to give his Memoirs of a Cavalier an air of reality? What are the two main divisions of the work, and what their connecting point? What is its value in relation to history? What "two great errors" of King Charles and his friends are noted?

TRANSLATION FROM GREEK.

Rev. W. W. MERRY.

Wednesday, 16th June 1880. 10 A.M. to 1 P.M.

Three only of the following passages are to be attempted, with the questions referring to them.

Translate into English:

Ἔνθα δ' ἄρ' ἐν λοχμῃ πυκινῇ κατέκειτο μέγας σῦς.
Τὴν μὲν ἄρ' οὔτ' ἀνέμων διάει μένος ὑγρὸν ἀέντων,
Οὔτε μιν ἠέλιος φαέθων ἀκτῖσιν ἔβαλλεν,
Οὔτ' ὄμβρος περάασκε διαμπερές· ὡς ἄρα πυκνὴ
Ἦεν· ἀτὰρ φύλλων ἐνέην χύσις ἤλιθα πολλή.
Τὸν δ' ἀνδρῶν τε κυνῶν τε περὶ κτύπος ἦλθε ποδοῖιν,
Ὡς ἐπάγοντες ἐπῆσαν· ὁ δ' ἀντίος ἐκ ξυλόχοιο,
Φρίξας εὖ λοφιὴν πῦρ δ' ὀφθαλμοῖσι δεδορκὼς,
Στῆ ῥ' αὐτῶν σχεδόθεν· ὁ δ' ἄρα πρώτιστος Ὀδυσσεὺς
Ἔσσυτ', ἀνασχόμενος δολιχὸν δόρυ χειρὶ παχείῃ,
Οὐτάμεναι μεμαώς· ὁ δέ μιν φθάμενος ἔλασεν σῦς
Γουνὸς ὕπερ· πολλὸν δὲ διήφυσε σαρκὸς ὀδόντι
Λικριφὶς ἀίξας, οὐδ' ὀστέον ἷκετο φωτός.
Τὸν δ' Ὀδυσεὺς οὔτησε τυχὼν κατὰ δεξιὸν ὦμον,
Αντικρὺ δὲ διῆλθε φαεινοῦ δουρὸς ἀκωκή·
Κὰδ' δ' ἔπεσ' ἐν κονίῃσι μακὼν ἀπὸ δ' ἔπτατο θυμός.
Τὸν μὲν ἄρ' Αὐτολύκου παῖδες φίλοι ἀμφεπένοντο·
Ὠτειλὴν δ' Ὀδυσῆος ἀμύμονος ἀντιθέοιο
Δῆσαν ἐπισταμένως· ἐπαοιδῇ δ' αἷμα κελαινὸν
Ἔσχεθον· αἶψα δ' ἵκοντο φίλου πρὸς δώματα πατρός.

HOMER.

Parse the words διάει, περάασκε, ἔσσυτ', οὐτάμεναι, μακών, ἔσχεθον.

Estimate the character of Odysseus as portrayed by Homer; and compare it with the picture given of him in Sophocles and Virgil.

On what grounds have the Iliad and Odyssey been assigned to different authors?

Ἐς τοῦτο γὰρ δὴ ἠναγκάσμεθα, ὥστε πεζομαχεῖν ἀπὸ τῶν νεῶν, καὶ τὸ μήτε αὐτοὺς ἀνακρούεσθαι, μήτ' ἐκείνους ἐᾶν, ὠφέλιμον φαίνεται, ἄλλως τε καὶ τῆς γῆς, πλὴν ὅσον ὁ πεζὸς ἡμῶν ἐπέχῃ, πολεμίας οὔσης· ὧν χρὴ μεμνημένους διαμάχεσθαι ὅσον ἂν δύνησθε, καὶ μὴ ἐξωθεῖσθαι ἐς αὐτὴν, ἀλλὰ ξυμπεσούσης νηὶ νεὼς μὴ πρότερον ἀξιοῦν ἀπολύεσθαι πρὶν τοὺς ἀπὸ τοῦ πολεμίου καταστρώματος ὁπλίτας ἀπαράξητε. καὶ ταῦτα τοῖς ὁπλίταις οὐχ ἧσσον τῶν ναυτῶν παρακελεύομαι, ὅσῳ τῶν ἄνωθεν μᾶλλον τὸ ἔργον τοῦτο· ὑπάρχει δ' ἡμῖν ἔτι νῦν γε τὰ πλείω τῷ πεζῷ ἐπικρατεῖν. τοῖς δὲ ναύταις παραινῶ, καὶ ἐν τῷ αὐτῷ τῷδε καὶ δέομαι, μὴ ἐκπεπλῆχθαί τι ταῖς ξυμφοραῖς ἄγαν, τήν τε παρασκευὴν ἀπὸ τῶν καταστρωμάτων βελτίω νῦν ἔχοντας καὶ τὰς ναῦς πλείους, ἐκείνην τε τὴν ἡδονὴν ἐνθυμεῖσθαι, ὡς ἀξία ἐστὶ διασώσασθαι, οἳ τέως Ἀθηναῖοι νομιζόμενοι καὶ μὴ ὄντες ὑμῶν, τῆς τε φωνῆς τῇ ἐπιστήμῃ καὶ τῶν τρόπων τῇ μιμήσει, ἐθαυμάζεσθε κατὰ τὴν Ἑλλάδα, καὶ τῆς ἀρχῆς τῆς ἡμετέρας οὐκ ἔλασσον κατὰ τὸ ὠφελεῖσθαι, ἔς τε τὸ φοβερὸν τοῖς ὑπηκόοις καὶ τὸ μὴ ἀδικεῖσθαι πολὺ πλεῖον μετείχετε.

THUCYDIDES.

Give a short sketch of the life of Nicias; and discuss the estimate which Thucydides forms of his character.

What claim has Thucydides to be called "the first philosopher of history"? Give, as far as possible in his own words, the design of his work.

Εἰ μὲν τὸν Ὀρφέως εἶχον, ὦ πάτερ, λόγον,
Πείθειν ἐπᾴδουσ' ὥσθ' ὁμαρτεῖν μοι πέτρας,
Κηλεῖν τε τοῖς λόγοισιν οὓς ἐβουλόμην,
Ἐνταῦθ' ἂν ἦλθον. νῦν δὲ τἀπ' ἐμοῦ σοφὰ,
Δάκρυα παρέξω· ταῦτα γὰρ δυναίμεθ' ἄν.
Ἱκτηρίαν δὲ γόνασιν ἐξάπτω σέθεν
Τὸ σῶμα τοὐμὸν, ὅπερ ἔτικτεν ἥδε σοι,
Μή μ' ἀπολέσῃς ἄωρον· ἡδὺ γὰρ τὸ φῶς
Βλέπειν, τὰ δ' ὑπὸ γῆν μή μ' ἰδεῖν ἀναγκάσῃς.
Πρώτη σ' ἐκάλεσα πατέρα, καὶ σὺ παῖδ' ἐμέ·
Πρώτη δὲ γόνασι σοῖσι σῶμα δοῦσ' ἐμὸν
Φίλας χάριτας ἔδωκα κἀντεδεξάμην.
Λόγος δ' ὁ μὲν σὸς ἦν ὅδ'· ἆρά σ' ὦ τέκνον

Εὐδαίμον' ἀνδρὸς ἐν δόμοισιν ὄψομαι,
Ζῶσάν τε καὶ θάλλουσαν ἀξίως ἐμοῦ;
Οὐμὸς δ' ὅδ' ἦν αὖ, περὶ σὸν ἐξαρτωμένης
Γένειον, οὗ νῦν ἀντιλάζομαι χερί·
Τί δ' ἆρ' ἐγὼ σὲ, πρέσβυν ἆρ' ἐσδέξομαι
Ἐμῶν φίλαισιν ὑποδοχαῖς δόμων, πάτερ,
Πόνων τιθηνοὺς ἀποδιδοῦσά σοι τροφάς;
Τούτων ἐγὼ μὲν τῶν λόγων μνήμην ἔχω,
Σὺ δ' ἐπιλέλησαι, καί μ' ἀποκτεῖναι θέλεις.

EURIPIDES.

State broadly the difference between Euripides and his predecessors Æschylus and Sophocles in (1) religious feeling; (2) literary style.

What picture does Aristophanes draw of Euripides? After making allowance for the exaggeration of comedy, do his criticisms seem to you to be fair?

Σκέψασθε δὲ καὶ αὐτοῦ Ἀνδοκίδου τὸν βίον ἀφ' οὗ ἠσέβηκε, καὶ εἴ τις τοιοῦτος ἕτερός ἐστιν. Ἀνδοκίδης γὰρ ἐπειδὴ ἥμαρτεν, ἐξ ἐπιβολῆς εἰσαχθεὶς εἰς τὸ δικαστήριον, ἔδησεν ἑαυτὸν τιμησάμενος δεσμοῦ, εἰ μὴ παραδοίη τὸν ἀκόλουθον· εὖ δ' ἤδει οὐ δυνήσομενος παραδοῦναι, ὃς διὰ τοῦτον καὶ τὰ τούτου ἁμαρτήματα ἀπέθανεν ἵνα μὴ μηνυτὴς γένοιτο. Καίτοι πῶς οὐ θεῶν τις τὴν τούτου γνώμην διέφθειρεν, ὃς ῥᾷον ἡγήσατο δεσμοῦ τιμήσασθαι ἢ ἀργυρίου ἐπ' ἐλπίδι τῇ αὐτῇ; ἐκ δ' οὖν τούτου τοῦ τιμήματος ἐδέδετο ἐγγὺς ἐνιαυτὸν, καὶ ἐμήνυσε δεδεμένος κατὰ τῶν αὐτοῦ ξυγγενῶν καὶ φίλων ἀδείας δοθείσης αὐτῷ εἰ δόξειε τἀληθῆ μηνῦσαι. Μετὰ δὲ ταῦτα, ἐπειδὴ ἀπεκτονὼς ἦν οὓς αὐτὸς ἔφη περὶ πλείστου ποιεῖσθαι, ἔδοξε τἀληθῆ μηνῦσαι καὶ ἐλύθη· καὶ προσεψηφίσασθε ὑμεῖς αὐτὸν εἴργεσθαι τῆς ἀγορᾶς καὶ τῶν ἱερῶν, ὥστε μὴ ἀδικουμένῳ ὑπὸ τῶν ἐχθρῶν δύνασθαι δίκην λαβεῖν. Μετὰ δὲ ταῦτα ἔπλευσεν ὡς τὸν Κιττιέων βασιλέα, καὶ προδιδοὺς ληφθεὶς ὑπ' αὐτοῦ ἐδέθη· καὶ οὐ μόνον τὸν θάνατον ἐφοβεῖτο, ἀλλὰ καὶ τὰ καθ' ἡμέραν αἰκίσματα, οἰόμενος τὰ ἀκρωτήρια ζῶντος ἀποτμηθήσεσθαι. Ἀποδρὰς δὲ ἐκ τούτου τοῦ κινδύνου κατέπλευσεν εἰς τὴν ἑαυτοῦ πόλιν ἐπὶ τῶν τετρακοσίων· θεὸς λήθην ἔδωκεν ὥστε εἰς τοὺς ἠδικημένους αὐτοὺς ἐπεθύμησεν ἀφικέσθαι.

LYSIAS.

Give some account of the ἀσεβείας δίκη in which Andocides was involved.

Explain the terms εἰσαγγελία, ἀγὼν ἀτίμητος, ἀτιμία, προβούλευμα, γραφὴ παρανόμων, δοκιμασία.

TRANSLATION INTO GREEK.

Reverend T. FIELD, B.D.

Wednesday, 16th June 1880. 2 P.M. to 5 P.M.

I.—*Translate into Greek Prose:*

The common sort of people always find fault with the times, and some must always have reason; for the merchant gains by peace and the soldier by war; the shepherd by wet seasons and the ploughman by dry; when the city fills, the country grows empty; and while trade increases in one place it decays in another. In such variety of conditions and courses of life, men's designs and interests must be opposite one to another, and both cannot succeed alike: whether the winner laugh or no, the loser will complain; and rather than quarrel with his own skill or fortune, will do it with the dice, or those he plays with, or with the master of the house. When anybody is angry, somebody must be in fault; and those faults of seasons which cannot be remedied, of accidents that could not be prevented, of miscarriages that could not be foreseen, are often laid upon the Government; and whether right or wrong, have the same effect of raising or increasing the common and popular discontent.

Or this,

Mere necessity enforced these poor nations to trouble the world, in following such hard adventures. For their country, being more fruitful of men than of sustenance, and shut up on the north side with intolerable cold, which denied issue that way to their overswelling multitudes, they were compelled to discharge upon the south, and by right or wrong to drive others out of possession, as having title to all that they had power to get, because they valued all that weaker but more civil people had. Their sturdy bodies, patient of hunger, cold, and all hardness, gave them great advantage over such as were accustomed to a more delicate life, and could not be without a thousand superfluities. Wherefore most commonly they prevailed very far: their next neighbours giving them free passage, that they might the sooner be rid of them; others giving them, besides passage, victuals and guides to conduct them to more wealthy places; others hiring them to depart with great presents; so as, the farther they went on, the more pleasant lands they found, and the more effeminate people.

II.—*Translate into Greek Iambics:*

Hunting the buck,
I found him sitting by a fountain's side,
Of which he borrowed some to quench his thirst,
And paid the nymph again as much in tears.

A garland lay him by, made by himself,
Of many several flowers bred in the vale,
Stuck in that mystic order, that the rareness
Delighted me: but ever when he turn'd
His tender eyes upon 'em, he would weep
As if he meant to make 'em grow again.
Seeing such pretty helpless innocence
Dwell in his face, I ask'd him all his story:
He told me that his parents gentle died,
Leaving him to the mercy of the fields,
Which gave him roots; and of the crystal springs
Which did not stop their courses; and the star,
Which still, he thanked h'vn, yielded him his light.

TRANSLATION FROM LATIN.

Professor W. SELLAR.

Tuesday, 15th June 1880. 10 A.M. to 1 P.M.

[*Three only of the following passages are to be attempted, with the questions attached to them. Credit will be given for the style of of the translation.*]

Translate into English:

Quis autem non sentit omnem auctoritatem optimatium tabellariam legem abstulisse? quam populus liber numquam desideravit, idem oppressus dominatu ac potentia principum flagitavit. Itaque graviora judicia de potentissimis hominibus exstant vocis quam tabellæ. Quam ob rem suffragandi nimia libido in non bonis causis eripienda fuit potentibus, non latebra danda populo, in qua bonis ignorantibus, quid quisque sentiret, tabella vitiosum occultaret suffragium. Itaque isti rationi neque lator quisquam est inventus nec auctor umquam bonus. Sunt enim quattuor leges tabellariæ, quarum prima de magistratibus mandandis: ea est Gabinia, lata ab homine ignoto et sordido. Secuta biennio post Cassia est de populi judiciis, a nobili homine lata, L. Cassio, sed—pace familiæ dixerim—dissidente a bonis atque omnis rumusculos popularis auræ aucupante. Carbonis est tertia de jubendis legibus ac vetandis, seditiosi atque improbi civis, cui ne reditus quidem ad bonos salutem a bonis potuit adferre. Uno in genere relinqui videbatur vocis suffragium, quod ipse Cassius exceperat, perduellionis: dedit huic quoque judicio C. Cælius tabellam doluitque, quoad vixit, se, ut opprimeret C. Popilium, nocuisse rei publicæ. Et avus quidem noster singulari virtute in hoc municipio, quoad vixit, restitit M. Gratidio, cujus in matrimonio sororem, aviam nostram, habebat, ferenti legem tabellariam: excitabat enim fluctus in simpulo, ut dicitur, Gratidius, quos post filius ejus in Ægæo excitavit mari. Ac nostro quidem avo, cum res esset ad senatum delata, M. Scaurus consul "utinam," inquit "M. Cicero, isto animo atque virtute in summa re publica nobiscum versari quam in municipali maluisses!"

CICERO.

(1.) About what time were the various ballot-laws introduced?

(2.) How were the *tabellæ* marked (1) in legislation, (2) in criminal trials?

(3.) What is the origin and meaning of the word *perduellio*? What kind of offences were included under it?

(4.) *In hoc municipio.* What is the *municipium* mentioned here, and where was it situated?

Magnam eo die pietatis eloquentiæque famam Vipstanus Messalla adeptus est, nondum senatoria ætate, ausus pro fratre Aquilio Regulo deprecari. Occurrit truci oratione Curtius Montanus, eo usque progressus ut post cædem Galbæ datam interfectori Pisonis pecuniam a Regulo adpetitumque morsu Pisonis caput objectaret. "Hoc certe" inquit "Nero non coegit, nec dignitatem aut salutem illa sævitia redemisti. Libidine sanguinis et hiatu præmiorum ignotum adhuc ingenium cæde nobili imbuisti, cum ex funere rei publicæ raptis consularibus spoliis, septuagiens sestertio saginatus et sacerdotio fulgens innoxios pueros, inlustres senes, conspicuas feminas eadem ruina prosterneres, cum segnitiam Neronis incusares, quod per singulas domos seque et delatores fatigaret: posse universum senatum una voce subverti. Retinete, patres conscripti, et reservate hominem tam expediti consilii, ut omnis ætas instructa sit, et quo modo senes nostri Marcellum, Crispum, juvenes Regulum imitentur. Invenit æmulos etiam infelix nequitia: quid si floreat vigeatque? et quem adhuc quæstorium offendere non audemus, prætorium et consularem visuri sumus? an Neronem extremum dominorum putatis? idem crediderant qui Tiberio, qui Gaio superstites fuerunt, cum interim intestabilior et sævior exortus est. Non timemus Vespasianum; ea principis ætas, ea moderatio: sed diutius durant exempla quam mores. Elanguimus, patres conscripti, nec jam ille senatus sumus, qui occiso Nerone delatores et ministros more majorum puniendos flagitabat. Optimus est post malum principem dies primus."

TACITUS.

Write short notes on the words *senatoria ætate, dignitatem, hiatu præmiorum, septuagiens sestertio, saginatus, delatores, intestabilior.*

At parte ex alia, qua saxa rotantia late
Impulerat torrens arbustaque diruta ripis,
Arcadas, insuetos acies inferre pedestres,
Ut vidit Pallas Latio dare terga sequaci,
Aspera quis natura loci dimittere quando
Suasit equos, unum quod rebus restat egenis,
Nunc prece, nunc dictis virtutem accendit amaris;
Quo fugitis, socii? Per vos et fortia facta,
Per ducis Evandri nomen, devictaque bella,
Spemque meam, patriæ quæ nunc subit æmula laudi,
Fidite ne pedibus. Ferro rumpenda per hostes
Est via. Qua globus ille virûm densissimus urget,
Hac vos et Pallanta ducem patria alta reposcit.
Numina nulla premunt; mortali urgemur ab hoste
Mortales; totidem nobis animæque manusque.
Ecce, maris magna claudit nos obice pontus;
Deest jam terra fugæ. Pelagus Trojamne petemus?
Hæc ait, et medius densos prorumpit in hostes.
Obvius huic primum, fatis adductus iniquis,
Fit Lagus: hunc, magno vellit dum pondere saxum,
Intorto figit telo, discrimina costis
Per medium qua spina dabat; hastamque receptat

Ossibus hærentem. Quem non super occupat Hisbo,
Ille quidem hoc sperans: nam Pallas ante ruentem,
Dum furit, incautum crudeli morte sodalis,
Excipit, atque ensem tumido in pulmone recondit.

VIRGIL.

Comment on the words *rotantia, quando, devictaque, Trojamne, prorumpit, super occupat.*

Dic, toga, facundi gratum mihi munus amici,
Esse velis cujus fama decusque gregis?
Appula Ledæi tibi floruit herba Phalanti,
Qua saturat Calabris culta Galesus aquis?
An Tartessiacus stabuli nutritor Iberi
Bætis in Hesperia te quoque lavit ove?
An tua multifidum numeravit lana Timavum,
Quem prius astrifero Cyllarus ore bibit?
Te nec Amyclæo decuit livere veneno,
Nec Miletus erat vellere digna tuo.
Lilia tu vincis nec adhuc delapsa ligustra
Et Tiburtino monte quod albet ebur.
Spartanus tibi cedet olor Paphiæque columbæ,
Cedet Erythræis eruta gemma vadis.
Sed licet hæc primis nivibus sint æmula dona,
Non sunt Parthenio candidiora suo.
Non ego prætulerim Babylonica picta superbe
Texta, Semiramia quæ variantur acu.
Non Athamanteo potius me mirer in auro,
Æolium dones si mihi, Phryxe, pecus.
O quantos risus pariter spectata movebit
Trita Palatina nostra lacerna toga!

MARTIAL.

Explain and illustrate from other writers the geographical and mythological allusions in this passage.

TRANSLATION INTO LATIN.

Reverend T. FIELD, B. D.

Tuesday, 15th June 1880. 2 P.M. to 5 P.M.

I.—*Translate into Latin:—*

Besides these several advantages which arise from hope, there is another, which is none of the least, and that is, its great efficacy in preserving us from setting too high a value on present enjoyments. The saying of Cæsar is very well known. When he had given away all his estate in gratuities amongst his friends, one of them asked what he had left for himself; to which that great man replied, Hope. His natural magnanimity hindered him from prizing what he was certainly possessed of, and turned all his thoughts upon something more valuable that he had in view. I question not but every reader will draw a moral from this story, and apply it to himself without my direction. The old story of Pandora's box (which many of the learned believe was formed

among the heathens upon the tradition of the fall of man) shows us how deplorable a state they thought the present life without hope. To set forth the utmost condition of misery, they tell us that our forefather, according to the pagan theology, had a great vessel presented him by Pandora. Upon his lifting up the lid of it, says the fable, there flew out all the calamities and distempers incident to men, from which, till that time, they had been altogether exempt. Hope, who had been inclosed in the cup with so much bad company, instead of flying off with the rest, stuck so close to the lid of it, that it was shut down upon her, and she alone remained in the cup.

ADDISON.

Or this,

The English and Normans now prepared themselves for this important decision. But the aspect of things, on the night before the battle, was very different in the two camps. The English spent the time in riot and jollity and disorder: the Normans in silence and prayer, and in the functions of their religion. On the morning, the Duke called together the most considerable of his chieftains, and made them a speech suitable to the occasion. He represented to them, that the event which they and he had long wished for was approaching, the whole fortune of war now depended on their sword, and would be decided in a single action: that never army had greater motives for exerting a vigorous courage, whether they considered the prize which would attend their victory, or the inevitable destruction which must ensue upon their discomfiture: that if they remitted in the least their wonted prowess an enraged enemy hung upon their rear, the sea met them in their retreat, and an ignominious death was the certain punishment of their imprudent cowardice; that by collecting so numerous and brave a host, he had ensured every human means of conquest, and the commander of the enemy, by his criminal conduct, had given him just cause to hope for the favour of heaven, in whose hands alone lay the event of battles. The Duke next divided his army into three lines: he ordered the signal of battle to sound, and the whole army moving at once, and singing the hymn or song of Roland, advanced in order and with alacrity towards the enemy.

HUME.

II.—*For Latin Elegiacs:*

He sought his sire from shore to shore,
  He sought him day by day;
The prow he track'd was seen no more
  Breasting the ocean-spray:
Yet, as the winds his voyage sped,
He sail'd above his father's head,
  Unconscious where it lay
Deep deep beneath the rolling main;
  He sought his sire, he sought in vain.
Son of the brave! no longer weep:
  Still with affection true,
Along the wild disastrous deep
  Thy father's course pursue:
Full in his wake of glory steer,
His spirit prompts thy bold career,
  His compass guides thee through;
So, while thy thunders awe the sea,
Britain shall find thy sire in thee.

MONTGOMERY.

Or this,

For Latin Lyrics :

Not seldom, clad in radiant vest,
Deceitfully goes forth the morn :
Not seldom evening in the west
Sinks smilingly foresworn.
The smoothest seas will sometimes prove
To the confiding bark untrue :
And if she trusts the stars above,
They can be treacherous too.
The umbrageous oak, in pomp outspread,
Full oft, when storms the welkin rend,
Draws lightning down upon the head
It promised to defend.

WORDSWORTH.

FRENCH.

A. J. BUTLER, Esq., and A. ROCHE, Esq.

Friday, 25th June 1880. 10 A.M. to 1.30 P.M.

(Including the time occupied in writing from Dictation.)

PART I.

Translate into English :

Ma foi, tu n'es pas sage : eh quoi ? tu te révoltes
A la veille, que dis-je ? au moment des récoltes.
Car enfin rassemblons (puisqu'il faut avec toi
Descendre à des détails si peu dignes de moi),
Rassemblons, en un point de précision sûre,
L'état de ma fortune et présente et future.
De tes gages déjà le paiement est certain.
Ce soir, une partie ; et l'autre, après-demain.
Je réussis : j'épouse une femme savante.
Vois le bel avenir qui de là se présente.
Vois naître tour à tour de nos feux triomphants,
Des pièces de théâtre, et de rares enfants.
Les aiglons généreux et dignes de leurs races,
A peine encore éclos voleront sur nos traces.
Ayons-en trois. Léguons le comique au premier,
Le tragique au second, le lyrique au dernier.
Par eux seuls, en tous lieux, la scène est occupée.
Qu'à l'envi cependant, donnant dans l'épopée,
Et mon épouse et moi nous ne lâchions par an,
Moi, qu'un demi-poëme ; elle, que son roman :
Vers nous, de tous côtés, nous attirons la foule.
Voilà dans la maison l'or et l'argent qui roule ;
Et notre esprit qui met, grâce à notre union,
Le théâtre et la presse à contribution.

Des pièces...de rares enfans. Why is the article inserted before *pièces* and omitted before *enfans?* What is the difference in meaning between *je ne demande pas de pain* and *je ne demande pas du pain?* Give the present, perfect, future, present subjunctive and infinitive of *naître, éclos.*

La famille de Valentin jouissait de quelque aisance, mais il n'y avait rien de plus dans la maison qu'une honnête médiocrité. Une douzaine de mille francs par an dépensés avec ordre et économie, ce n'est pas de quoi mourir de faim ; mais quand une famille entière vit là-dessus, ce n'est pas de quoi donner des fêtes. Toutefois, par un caprice du hasard, Valentin était né avec les goûts que peut avoir le fils d'un grand seigneur. A père avare, dit-on, fils prodigue ; à parents économes, enfant dépensier. Ainsi le veut la Providence, que cependant tout le monde admire. Valentin avait fait son droit, et était avocat sans causes, profession commune aujourd'hui. Avec l'argent qu'il avait de son père et celui qu'il gagnait de temps en temps, il pouvait être assez heureux, mais il aimait mieux tout dépenser à la fois et se passer de tout le lendemain. Vous vous souvenez, madame, de ces marguerites que les enfants effeuillent brin à brin ? *Beaucoup*, disent-ils à la première feuille ; *passablement*, à la seconde ; et à la troisième, *pas du tout.* Ainsi faisait Valentin de ses journées ; mais le *passablement* n'y était pas, car il ne pouvait le souffrir.

(*a.*) L'orgueil se dédommage toujours et ne perd rien, lors même qu'il renonce à la vanité.

(*b.*) Ce n'est pas assez d'avoir de grandes qualités, il en faut avoir l'économie.

(*c.*) Les corps politiques ont leurs défauts inévitables, comme les divers âges de la vie humaine. Qui peut garantir la vieillesse des infirmités, hors la mort ?

(*d.*) Les passions nous séparent quelquefois de la société, et nous rendent tout l'esprit qui est au monde aussi inutile que nous le devenons nous-même aux plaisirs d'autrui.

Give the genders of *orgueil, corps, défaut, plaisir.* Parse *leurs, autrui.* In (*d.*), to what does the second *le* refer ? Why is *même* in the singular ?

PART II.

Translate into French :

Cobden did not originate free trade.
They have shaken hands and so ends the matter.
Did you not agree with me for a penny a day ?
There were no table-cloths in the coffee-houses.
The sea-side does not agree with every constitution.
They have done for me, Nelson said. How goes the day with us ?
That rogue gave evidence against his daughter-in-law.
The earl intends to take the chair at the next meeting.

THE MAN AND THE LION.

The Man once invited the Lion to be his guest, and received him with princely hospitality in a magnificent palace, filled with a profusion of fine specimens of sculpture and painting. The most prominent of the subjects had an especial interest for the noble animal who stalked by them.

There was, however, one remarkable feature in all of them, that, diverse as they were in other respects, in one point they all agreed, that the Man was always victorious, and the Lion was always overcome. There was a lion hunt, or what had been such, for the brute was rolling round in the agonies of death, and his conqueror on his bleeding horse was surveying them from a distance. There was a gladiator from the Roman amphitheatre in mortal struggle with his tawny foe, and it was plain who was getting the mastery. There was a lion in a net; four lions, yoked in harness, were drawing the car of a Roman emperor; and elsewhere stood Hercules, clad in the lion's skin, and with the club which demolished him. Nor was this all; the lion was not always triumphed over, mocked, spurned; but he was tortured into extravagant forms. The feet of elaborate tables fell away into lions' paws; lions' faces grinned on each side the shining mantelpieces; and lions' mouths held tight the handles of the doors. There were sphinxes too, half lion, half woman; there were lions rampant holding flags; lions and unicorns; lions white, black, and red.

After he had gone over the mansion, his entertainer asked him what he thought of the splendours it contained; and he in reply did full justice to its magnificence, but added "Lions would have fared better, had lions been the artists."

COMPOSITION.

Développer une de ces pensées :

On se voit d'un autre œil qu'on ne voit son prochain.
Chacun croit aisément ce qu'il craint et ce qu'il désire.
Ne t'attends qu'à toi seul.
Le mieux est souvent l'ennemi du bien.

FRENCH DICTATION.

M. A. HAMONET.

Friday, 25th June. 11 A.M.

Lettre de Milton à un de ses amis.

On m'accuse d'être pauvre, parce que je n'ai jamais voulu m'enrichir par des moyens déshonnêtes; on m'accuse d'être aveugle, parce que j'ai perdu la vue au service de la liberté; on m'accuse d'être lâche, et cependant, quand j'avais l'usage de mes yeux et de mon épée, je n'ai jamais craint les plus hardis; enfin, on m'accuse d'être difforme, et nul ne fut plus beau que moi dans l'âge de la beauté. Aujourd'hui, je ne me plains pas même de mes infirmités; dans la nuit qui m'environne, la lumière de la divine présence brille pour moi d'un plus vif éclat; Dieu me regarde avec plus de tendresse et de compassion, parce que je n'ai plus à voir que lui. Le malheur devrait me servir de protection contre les injures et me rendre sacré, non pour cette raison que je suis privé de la clarté du ciel, mais plutôt parce que je suis ainsi à l'ombre des ailes divines qui semblent produire en moi les ténèbres. C'est à cela que j'attribue l'assiduité de mes amis, leurs attentions consolantes, leurs fréquentes et cordiales visites et leurs respectueuses déférences pour moi. Mon dévouement à ma patrie ne m'a guère récompensé; c'est pourtant ce doux nom de patrie qui me charme toujours. Adieu. Je vous prie d'excuser l'incorrection de cette lettre. L'enfant à qui je suis forcé de la dicter ne sait pas le latin, et je lui épelle chaque syllabe pour que vous puissiez lire dans mon âme.

GERMAN.

Dr. E. OSWALD.

Monday, 28th June 1880. 2 P.M. to 5.30 P.M.

(Including the time occupied in writing from Dictation.)

Translate into English:—

Die Phönikier.—Ihre Heimath ist der schmale Küstenstreif zwischen Kleinasien, dem syrischen Hochland und Aegypten, die Ebene genannt, das heißt Chanaan. Nur mit diesem Namen hat die Nation sich selber genannt—noch in der christlichen Zeit nannte der libysche Bauer sich einen Chanaaniter; den Hellenen aber hieß Chanaan das „Purpurland" oder auch das Land „der rothen Männer," Phönika; und Phönikier pflegten gleichfalls die Italiker und pflegen wir noch die Chanaaniter zu heißen. Das Land ist wohl geeignet zum Ackerbau, aber vor allen Dingen sind die vortrefflichen Häfen und der Reichthum an Holz und Metallen dem Handel günstig, der hier, wo das überreiche östliche Festland hinantritt an die weithin sich ausbreitende insel- und hafenreiche mittelländische See, vielleicht zuerst in seiner ganzen Großartigkeit dem Menschen aufgegangen ist. Was Muth, Scharfsinn und Begeisterung vermögen, haben die Phönikier aufgeboten, um dem Handel und was aus ihm folgt, der Schiffahrt, Fabrication, Colonisirung, die volle Entwickelung zu geben und Osten und Westen zu vermitteln. In unglaublich früher Zeit finden wir sie in Kypros und Aegypten, in Griechenland und Sicilien, in Africa und Spanien, ja sogar auf dem atlantischen Meer und der Nordsee. Ihr Handelsgebiet reicht von Sierra Leone und Cornwallis bis zur malabarischen Küste; durch ihre Hände gehen das Gold und die Perlen des Ostens, der tyrische Purpur, die Sclaven, das Elfenbein, die Löwen- und Pardelfelle aus dem inneren Africa, der arabische Weihrauch, das Linnen Aegyptens, Griechenlands Thongeschirr und edle Weine, das cyprische Kupfer, das spanische Silber, das englische Zinn, das Eisen von Elba. Jedem Volke bringen die phönikischen Schiffer, was es brauchen kann oder doch kaufen mag, und überall kommen sie herum, um doch immer wieder zurückzukehren zu der engen Heimath, an der ihr Herz hängt.

Die Phönikier haben wohl ein Recht in der Geschichte genannt zu werden, neben der hellenischen und latinischen Nation; aber auch an ihnen, und vielleicht an ihnen am meisten, bewährt es sich, daß das Alterthum die Kräfte der Völker einseitig entwickelte. —Theodor Mommsen. Römische Geschichte.

Als die gelichteten Regimenter von der Stätte des Kampfes aufbrachen, um sich zur Nacht mit dem vorausgezogenen Heer zu vereinigen, war unter den Letzten, welche von der Befolgung zurückkehrten, Bernhard mit seiner Compagnie. Er erkannte die Hutfedern des Feldobersten vor einem Trupp Reiter, welcher am Wege hielt. „Ich melde mich zu Befehl meines Herrn Generals" grüßte Bernhard. „Laß die Höflichkeit," gebot der Andere, wandte sein Pferd dem Lager zu und gab dem Gefolge einen Wink, außer Gehörweite zu reiten. „Ich muß vertraulich mit dir reden und ich begehre deinen Rath." „Den brauchst du nicht, Bruder," versetzte der Rittmeister trocken. „Du warst stets neunmal klug und trägst jetzt deine Hutfeder wie Einer, der jahrelang den Befehl geführt hat."—Gustav Freytag. Die Ahnen. Die Geschwister.

Translate into idiomatic English the following phrases:—

1. Er ist mit einem blauen Auge davon gekommen.
2. Er hat Haare auf den Zähnen.
3. Er hört das Gras wachsen.
4. Und Sie glauben, ich werde das thun? Warum nicht gar!
5. Hoffen und Harren
   Macht Manchen zum Narren.

Grammatical and Etymological Questions.

1. State the first person singular of the past (imperfect) active, the past participle, and the 2nd person singular of the present indicative of the following verbs:—geben, begreifen, sterben, führen, können, lassen, erheben, reiten.
2. What rule governs the construction of a dependent clause?
3. *a.* Of what infinitive is gewesen the past participle?
   b. Give two words derived from the present participle of the same verb.
   c. Form a sentence in which that infinitive is used as a noun.
   d. Mention three nouns formed with the infinitive in question.

Translate into German:—

By this time July was far advanced, and the state of the city was, hour by hour, becoming more frightful. The number of the inhabitants had been thinned more by famine and disease than by the fire of the enemy. Yet that fire was sharper and more constant than ever. One of the gates was beaten in, one of the bastions was laid in ruins; but the breaches made by day were repaired by night with indefatigable activity. Every attack was still repelled. But the fighting men of the garrison were so much exhausted that they could scarcely keep their legs. Several of them, in the act of striking at the enemy, fell down from mere weakness. A very small quantity of grain remained, and was doled out by mouthfuls. The stock of salted hides was considerable, and by gnawing them the garrison appeased the pangs of hunger. Dogs fattened on the blood of the slain, who lay unburied round the town, were luxuries which few could afford to purchase. The price of a whelp's paw was five shillings and sixpence. Nine horses were still alive and but barely alive. They were so lean that little meat was likely to be found upon them. It was, however, determined to slaughter them for food. The people perished so fast that it was impossible for the survivors to perform the rights of sepulture. There was scarcely a cellar in which some corpse was not decaying.

German Composition.

Write—

1. A short biographical sketch of some Indian Statesman or General;

Or,

2. A short description of a journey from London to Bombay.

GERMAN DICTATION.

Dr. F. ALTHAUS.

Monday, 28th June 1880. 3 P.M.

Auf Moskau war jetzt alle Hoffnung gesetzt; dort mußte der Friede kommen. Wenn freilich diese Berechnung täuschte, so war der Besitz der Stadt ein zweideutiger Gewinn. Was sollte der Aufenthalt mit mehr als hunderttausend Mann näher bei Asien als bei Europa, inmitten größerer feindlicher Kräfte? Nicht einmal ruhige Winterquartiere oder Schutz vor Klima und Jahreszeit konnte Moskau gewähren, wenn der Feind seine unzweifelhafte Ueberlegenheit so brauchte, wie er konnte. Welche Wirkung mußte aber eine Niederlage üben, die an der Grenze Asiens erlitten ward, während der Krieg in Spanien Heer auf Heer verschlang, Deutschland sich regte, in Frankreich selbst der Glaube an die Unfehlbarkeit des Kaisers erschüttert ward? Napoleon verhehlte sich nicht, daß der Besitz von Moskau nichts werth war, wenn er nicht den Frieden brachte. Die französische Armee, sagte er selber, gliche in diesem Falle einem Schiffe, das auf dem Eise festsitze. Indeß Alexander, fügte er beruhigt hinzu, wird es nicht so weit kommen lassen; er wird Frieden machen. Mit dieser Hoffnung näherte er sich der alten Czarenstadt.

ITALIAN.

A. J. BUTLER, Esq., and Signor L. RICCI.

Tuesday, 29th June 1880. 2 P.M. to 5.30 P.M.

(Including the time occupied in writing from Dictation.)

PART I.

I.—*Translate into English Prose:—*

Cieca fiducia! Or non sai tu, ch' uom servo
Temer si dee più ch'altro? Inerme Silla
Si fea, ne spento era perciò: ma cinti
Di satelliti e d'armi e di sospetto,
Cajo, e Nerone, e Domiziano, e tanti
Altri assoluti imperator di schiavi,
Da lor svenati caddero vilmente.
Perchè irritar chi già obbedisce? Ottieni
Altrimenti il tuo fine. È ver, del tutto
Liberi mai non fur costor; ma servi
Neppur di un solo.—Intorpidir dei pria
Gli animi loro; il cor snervare affatto;
Ogni dritto pensier svolger con arte;
Spegner virtude (ove pur n'abbia), o farla
Scherno alle genti; i men feroci averti
Tra' famigliari; e i falsamente alteri
Avvilire, onorandoli. Clemenza,
E patria, e gloria, e leggi, e cittadini
Alto suonar; più d' ogni cosa, uguale
Fingerti a' tuoi minori.—Ecco i gran mezzi,
Onde in ciascun si cangi a poco a poco
Prima il pensar, poi gli usi, indi le leggi;
Il modo poscia di chi regna; e in fine,
Quel che riman solo a cangiarsi, il nome.

La Chiesa era piena di popolo, e l' ufficio Divino cominciato, quando ancora Giuliano de' Medici non era in Chiesa. Ondechè Francesco de' Pazzi insieme con Bernardo alla sua morte destinati andarono alle sue case a trovarlo, e con prieghi, e con arte nella Chiesa lo condussero. È cosa veramente degna di memoria, che tanto odio, tanto pensiero di tanto eccesso si potesse con tanto cuore e tanta ostinazione d' animo da Francesco e da Bernardo ricoprire. Perchè condottolo nel tempio, e per la via e nella Chiesa con motteggi e giovenili ragionamenti l' intrattennero. Nè mancò Francesco sotto colore di carezzarlo con le mani e con le braccia strignerlo, per vedere se lo trovava o di corazza o d'.altra simile difesa munito. Sapevano Giuliano e Lorenzo l' acerbo animo de' Pazzi contra di loro, e com' eglino desideravano di torre loro l'autorità dello stato; ma non temevano già della vita, come quelli che credevano, che quando pur eglino avessero a tentare cosa alcuna, civilmente e non con tanta violenza l' avessero a fare. E perciò anche loro non avendo cura alla propria salute, d' essere loro amici simularono. Sendo adunque preparati gli ucciditori, quelli a canto a Lorenzo (dove per la moltitudine che nel tempio era, facilmente e senza sospetto potevano stare) e quelli altri insieme con Giuliano, venne l' ora destinata, e Bernardo Bandini con un' arma corta, a quello effetto apparecchiata, passò il petto a Giuliano, il quale dopo pochi passi cadde in terra.

(*a.*) Parse *dee, fea, ottieni, costor, cangi, torre;* and in the case of the verbs give the 3rd person singular of the perfect and future indicative and of the present subjunctive, and the infinitive.

(*b.*) Give the singular of *le mani* and *le braccia*, and account for the gender in the singular and plural in both words.

(*c.*) Comment on the use of *loro* in II.

(*d.*) Trace the etymological connexion between *passò* and *passi.*

PART II.

II.—*Grammatical Questions:—*

1. When is the genitive case to be used after a comparative adjective?
2. What auxiliary is used in conjugating the compound tenses of Reflective Verbs in Italian—
   (*a*) when their reflective pronoun is in the accusative?
   (*b*) when their reflective pronoun is in the dative?
3. When do conjunctive personal pronouns *precede* the verb in Italian, and when do they *follow* it?
4. Illustrate, with examples in Italian, the different meaning of the three demonstrative adjectives.
5. What interjections in Italian agree with the noun, like adjectives?

[With the answer of each question should be given also an Italian phrase illustrative of the same.]

III.—*Translate into Italian:—*

Warren was distinguished among his comrades as an excellent swimmer, boatman, and scholar. At fourteen he was first in the examination for the foundation. His name, in gilded letters on the walls of the dormitory, still attests his victory over many older competitors. He stayed two years longer at the school, and was looking forward to a studentship at Christ Church, when an event happened which changed the whole course of his life. Howard Hastings died, bequeathing his nephew to the care of a friend and distant relation, named Chiswick. This gentleman, though he did not absolutely refuse the charge, was desirous to rid himself of it as soon as possible. Dr. Nichols made strong remonstrances against the cruelty of interrupting the studies of a youth who seemed likely to be one of the first scholars of the age. He even offered to bear the expense of sending his favourite pupil to Oxford. But Mr. Chiswick was inflexible. He had it in his power to obtain for the lad a writership in the service of the East India Company. Whether the young adventurer, when once shipped off, made a fortune, or died of liver complaint, he equally ceased to be a burden to anybody. Warren was accordingly removed from Westminster School, and placed for a few months at a commercial academy, to study arithmetic and book-keeping. In January, 1750, a few days after he had completed his seventeenth year, he sailed for Bengal.

MACAULAY.

IV.—*Translate into Italian the following:*

1. However rich you may be, you are not so rich as all your fellow-citizens put together.

2. So long as you do your duty you need not fear those who hate you.
3. You speak more than you think.
4. I had to see him at a quarter to five o'clock, but he did not return home until twenty-five minutes past five.
5. I shall go to Italy on my return from Canada, where I purpose residing the whole of next summer.
6. Charles has seen his sister and her children.

Select *one* of the following subjects for a short essay in Italian:

1. Gli scioperi.
2. Il brigandaggio.
3. La nebbia.
4. L'Istmo di Suez.

ITALIAN DICTATION.

Tuesday, 29th June 1880.

Dai più antichi tempi sino ad oggi la musica del canto e del suono è stata sempre con ogni genere di rappresentazioni: i cori delle tragedie e delle commedie erano cantati a suono di tibia; e negl' intermezzi degli atti si sonava come oggi si suona, e talvolta ancora si cantavano canzoni diverse. Così tra i Greci ed i Romani, così fino al cinquecento in tutte le rappresentazioni profane e sacre. Quando si pensò di accompagnare tutto il dramma col canto e col suono, allora nacque il Melodramma, che vuol dire *rappresentazione cantata.* Questo pensiero venne la prima volta ad alcuni gentiluomini fiorentini negli ultimi anni del secolo decimosesto; i quali essendo amanti di musica; e credendo che il dramma greco, perchè in versi, fosse stato cantato, vollero tentare novità ed imitare i Greci: e così Ottavio Rinuccini scrisse una favola in versi intitolata *Dafne,* Jacopo Peri vi mise le note, e in casa di Jacopo Corsi nel 1597 fu rappresentato il primo melodramma con grande plauso e concorso . . . . . Il dramma era tutto poesia, si svolgeva secondo le leggi della poesia; come vi entrò la musica, e diventò melodramma, la musica prima accompagnò, poi soverchiò, poi annullò la poesia, le impose le sue leggi, e trasmutò interamente il dramma. Oggi il melodramma non è più rappresentazione cantata, ma piuttosto canto rappresentativo; non è più poesia ma musica, non è importante per la favola ed i versi, ma per la musica vocale e strumentale. Tutti sanno che oggi il libretto spesso è orribile, e intanto la musica è un capolavoro.

(SETTEMBRINI.)

ARITHMETIC AND ALGEBRA.

Rev. JOHN BOND, M.A.

Monday, 21st June. 2 P.M. to 5 P.M.

1. State and prove the rule for the multiplication of decimal fractions.
   If ·00744 cwt. cost £·028644, what was the price per lb. in pence?

2. Which is the more profitable investment; 3 per cent. Consols at 90, or shares selling at £150, and paying a half-yearly dividend of £2. 16*s.* 3*d.* per share?
   How must £2,550 be divided between these two investments so that equal incomes may be derived from the two parts?

3. A gave B half a minute start in a race over a measured mile, and had run 11 yards past the winning post when B reached it. But if, when B started to run the mile, A had started simultaneously 176 yards behind him, they would have reached the winning-post exactly at the same time.
   Find the time in which each can run a mile.

4. A man ought to make a payment of £100 on June 30th and on December 31st every year, but has paid nothing since June 30th, 1878. Determine the sum which will be required for a full settlement at the end of the present month, reckoning interest at the rate of 5 per cent. per annum, and adding unpaid interest half-yearly to the principal due.

5. Multiply $x^3 + (p+n)\,nx + p^2n^2$ by $x^2 - (p-n)\,nx + p^2n^2$; and divide $16x^2y^2 + 81x^{-2}y^{-2} + 36$ by the product of $2x + \sqrt{\frac{6x}{y}} + \frac{3}{y}$ and $2x - \sqrt{\frac{6x}{y}} + \frac{3}{y}$.

6. Prove that the product of any two quantities is equal to the product of their Greatest Common Measure and Least Common Multiple.
   Find the G.C.M. and L.C.M. of—
   $6a^3 + 7a^2 + a - 3$ and $9a^3 + 18a^2 + 14a + 3$.

7. Simplify the expressions—

(1.) $$\frac{2 + \frac{xy}{3x^2 - y^2}}{2 - \frac{xy}{3x^2 - y^2}} \div \frac{9x^2 + 12xy + 4y^2}{4x^2 + 4xy + y^2}.$$

(2.) $$\frac{a - x + b - y}{(\sqrt{ax} - \sqrt{by})^2 + (\sqrt{ay} + \sqrt{bx})^2} - \frac{b - z + a - x}{(\sqrt{az} - \sqrt{bx})^2 + (\sqrt{ax} + \sqrt{bz})^2}.$$

8. If $\sqrt[3]{a + \sqrt{b}} = x + \sqrt{y}$, shew that $\sqrt[3]{a - \sqrt{b}} = x - \sqrt{y}$.
   Express as binomial surds both the square and cube roots of $26 + 15\sqrt{3}$.

9. Solve the equations:

(1.) $\frac{3x-10}{6}+\frac{3x-16}{x+8}=\frac{x-12}{2}$.

(2.) $\frac{x}{a}+\frac{b}{y}=2=\frac{3y}{b}-\frac{a}{x}$.

10. Find the conditions which must be satisfied in order that the equations

$$x^2+ax+b^2=0,\ x^2-bx+a^2=0,$$

may have (1) the same roots, (2) one, and only one, common root.

In the latter case find the other root of each equation.

11. Prove that the sum of any two terms equidistant from the beginning and the end of an arithmetical series is equal to the sum of the first and last terms.

The first and last of an odd number of quantities in Harmonical Progression are $1\frac{1}{2}-\sqrt{2}$ and $1\frac{1}{2}+\sqrt{2}$ respectively. Find the middle term of the series.

12. Assuming the form of the continued product of any number of binomial factors, deduce the truth of the Binomial Theorem for a positive integral value of the index.

Expand $\frac{1}{x^2-5x+6}$ in a series—

(1) of the form $p_0+p_1x+p_2x^2+p_3x^3+$ &c.

(2) of the form $q_0+\frac{q_1}{x}+\frac{q_2}{x^2}+\frac{q_3}{x^3}+$ &c.

and shew that $q_{n+1}=6^n p_{n-1}$.

13. Prove that in the common system of logarithms the characteristic of the logarithm of any number can be found by inspection.

Find $\sqrt[5]{\cdot 002}$, having given

$\log 5 = \cdot 69897$ and $\log 2\cdot 8854 = \cdot 460206$.

14. The interest on a certain sum of money for 9 months is £30. 18*s*., and the discount for the same period at the same rate is £30. Find the sum of money and the rate per cent.

GEOMETRY.

A. S. BUTLER, Esq.

Tuesday, 22nd June 1880. 10 A.M. to 1 P.M.

1. If from the ends of the sides of a triangle there be drawn two straight lines to a point within it, these shall be together less than the other two sides of the triangle, but shall contain a greater angle. Three straight lines drawn from the vertices of a triangle

to a point within it are together less than the perimeter, but greater than the semiperimeter of the triangle.

2. Parallelograms on equal bases and between the same parallels are equal to one another. Find a point in one of two given straight lines such that the perpendiculars drawn through it to both the given lines may cut off from the other a segment of given length.

3. If the square described upon one of the sides of a triangle be equal to the squares described upon the other two sides of it, the angle contained by these two sides is a right angle.

Construct a square that shall be the third part of a given square.

4. A straight line is drawn from the vertex A of a triangle ABC, so as to bisect the base BC in D. Prove that the angle at A is acute, right, or obtuse, according as AD is greater than, equal to, or less than BD, the half of the base.

5. Prove that the angles in the same segment of a circle are equal to one another.

BAC, BA'C are two angles in the same segment of a circle, and AP, A'P' are drawn cutting BC in P and P', and making the angles BAP, BA'P' equal to the angles BCA, BCA' respectively: shew that AP is parallel to A'P'.

6. Describe a square about a given circle. If a straight line is drawn touching the circle at any point, shew that the segment intercepted upon it by any two opposite sides of the square subtends a right angle at the centre of the circle.

7. Construct an isosceles triangle, having each of the angles at the base double of the third angle.

If ABC be such a triangle, where A is the less angle, and if from A AD be drawn, so that the angle CAD is equal to the angle CAB, and AD meet BC produced in D; show that BD is divided in extreme and mean ratio.

8. If the exterior angle of a triangle, made by producing one of its sides, be divided into two equal parts by a straight line which also cuts the base produced; the segments between the dividing line and the extremities of the base have the same ratio which the other sides of the triangle have to one another. If the angle A of a triangle ABC and also the adjacent exterior angle be bisected by straight lines, of which the former meets the base BC in D and the latter the base produced in E, then a straight line, drawn through C parallel to AB and terminated by AD produced and AE, is bisected in C.

9. If a solid angle be contained by three plane angles, any two of them shall be greater than the third.

10. If the tangent at any point P of a parabola intersect the directrix in Z, then SZ is perpendicular to SP, where S is the focus.

PQ is a double ordinate of a parabola, and the line joining P to the foot of the directrix cuts the curve in P'; shew that P'Q passes through the focus.

11. Define "conjugate diameters." CP, CD are a pair of semi-conjugate diameters in an ellipse, PN and DR their ordinates; shew that the ratio of PN to CR is constant. If the tangent at P meet the major axis in T, and if Q is the foot of the perpendicular from C on the tangent, then prove that—

$$\frac{CQ.QT}{CT^2} = \frac{CN.PN}{CD^2}.$$

12. If from any point P of an hyperbola, PH and PK be drawn parallel to the asymptotes, meeting them in H and K respectively; then

$$4\,PH\,.\,PK = CS^2,$$

where S is a focus. In an hyperbola, supposing the two asymptotes and one point on the curve to be given in position, shew how to construct the curve; and find the position of the foci.

13. Tangents at the extremities of a focal chord of a conic meet the tangent at the vertex in T_1 and T_2: shew that $AT_1 \cdot AT_2 = AS^2$, S being the focus and A the vertex of the curve.

PURE MATHEMATICS. (1.)

Rev. JOHN BOND, M.A.

Tuesday, 22nd June 1880. 2 P.M. to 5 P.M.

1. Give a geometrical proof of the formula

$$\cos A + \cos B = 2\cos\frac{1}{2}(A+B).\cos\frac{1}{2}(A-B).$$

Shew that, so long as the sum of the cosines of the angles of a triangle is constant, the product of the sines of the halves of the angles will also be constant.

2. Prove that the sides of a triangle are proportional to the sines of the opposite angles.

A line drawn parallel to the hypothenuse of a triangle right-angled at C meets the sides CB, CA in P, Q respectively. Shew that—

$$\cot PAB - \cot QBA = 2\cot 2A.$$

3. Find the radii of the inscribed and circumscribed circles of a regular polygon.

The alternate angular points of a regular pentagon are joined by straight lines. Find the length of a side of the pentagon formed by these lines, and shew that the radius of the circle circumscribing it is

$$a\sqrt{1-\frac{2}{\sqrt{5}}},$$

where a is the side of the original pentagon.

4. Expand $(\cos\theta)^{2n+1}$ in a series of cosines of multiples of θ, and deduce the expansion of $(\sin\theta)^{2n+1}$ in a series of sines of multiples of θ.

Write down in each series the general term and the last term.

5. Find trigonometrical expressions for all the roots of the equation—

$$x^n - 1 = 0,$$

n being a positive integer.

Shew that the roots can always be arranged in a series of the form—

$$\alpha, \alpha^2, \alpha^3 \ldots \alpha^n.$$

6. Find the angle between the straight lines whose equations are—

$$Ax + By + C = 0, \quad A'x + B'y + C' = 0,$$

and deduce the conditions that they may be (1) parallel, (2) perpendicular to each other.

The ends of one diagonal of a rhombus are on the co-ordinate axes Ox, Oy at distances $2a$, a respectively from the origin, and the equation of one side is $4(y - a) = 3x$. Write down the equations of the diagonals and of the other sides, and shew that the area of the figure is $5a^2$.

7. Find the polar equation of a circle whose circumference passes through the pole.

Circles are described passing through the pole and through a fixed point on the initial line at a distance c from the pole.

Shew that the locus of the intersection of the tangent at this fixed point with the diameter through the pole is the curve

$$2r \cos \theta = c + r \sec \theta.$$

8. Investigate formulæ for a general transformation of rectangular co-ordinates.

Determine the co-ordinates of the centre, and the lengths of the axes of the ellipse—

$$5(x^2 + y^2) + 6xy = 4c(x + 5y).$$

9. Determine the equation of the chord of contact of the two tangents drawn to an ellipse from any external point.

Shew that, if the chord of contact touches the circle described on the semi-minor axis as diameter, the external point will lie on a parabola whose vertex is at the end of the minor axis.

10. Transform the equation—

$$x^4 + 4x^3 - 3x^2 + 46x - 48 = 0$$

into another wanting the second term, and find all its roots.

PURE MATHEMATICS. (2.)

Rev. H. W. WATSON, M.A.

Wednesday, 23rd June 1880. 10 A.M. to 1 P.M.

[*N.B.—Candidates are not expected to answer more than two-thirds of the following questions.*]

1. Find the differential coefficients of $\log_e x$ and of $\tan x$.

2. Find $\frac{dy}{dx}$ in the following cases:—

(1.) $y = \log e^x \left(\frac{x-2}{x+2}\right)^{\frac{1}{2}}$. (2.) $y = e^{x \sin x} \sin(x \sin x)$.

3. If y and z be two functions of x, such that

$$\frac{d}{dx}\left\{(1-x^2)\frac{dy}{dx}\right\} + ny = 0, \text{ and } \frac{d}{dx}\left\{(1-x^2)\frac{dz}{dx}\right\} + nz = 0,$$

prove that

$$\frac{d}{dx}\left\{(1-x^2)\left(y\frac{dz}{dx} - z\frac{dy}{dx}\right)\right\} = 0.$$

4. Enunciate Taylor's theorem.

If $f(x)$ be of the form $x^n + p_1 x^{n-1} + \&c. + p_n$, where n is integral and positive, and if $f_0(x), f_1(x)$, &c. be functions of x, such that—

$$f(x) = f_0(x)(x-h) + R_0, \quad f_0(x) = f_1(x)(x-h) + R_1,$$

and so on, R_0, R_1, &c. being independent of x, prove that—

$$R_r = \frac{1}{\lfloor r} f^r(h),$$

and therefore, that—

$$f(x+h) = x^n + R_{n-1}x^{n-1} + R_{n-2}x^{n-2} \ldots\ldots + R_0.$$

5. State without proof the rules by which the limiting values of the fraction $\frac{f(x)}{F(x)}$ may be found for a value of x which makes fx and Fx either both zero or both infinite.

If y and z be any functions of x which both vanish when $x = a$, prove that the limit of $y \log z$ when $x = a$ is zero.

Find $lt_{\theta=0} \dfrac{m \sin 2\theta - \cos 6 \tan (m \sin \theta)}{n \tan \theta}$.

6. Find the conditions that $f(x)$ may be a maximum or minimum when $x = a$.

Prove that $\sqrt{e}$ is a maximum value of $\left(\frac{1}{x}\right)^x$.

7. In plane curves prove that $\frac{dr}{ds} = \sqrt{1 - \frac{p^2}{r^2}}$ and $\rho = r\frac{dr}{dp}$, the symbols having their ordinary meaning.

8. If $p = r \sin \frac{s}{a}$ find the radius of curvature.

9. Prove that the curve:

$$y = (x-1)e^x - (x+1)e^{-x}$$

is symmetrical with respect to the axis of y, and that it cuts the axis of x in two points, and two only, each at a distance between 1 and 2 from the origin.

Trace the curve $ay^2 + y^3 + bx^2 = 0$,

(1) when a and b are both positive, (2) a positive and b negative.

10. Integrate:

(1) $\dfrac{xdx}{(2ax+x^2)^{\frac{3}{2}}}$, (2) $\sec^3 x dx$, (3) $\log \tan x + 2x \operatorname{cosec} 2x$.

Prove that if m and n be positive integers, of which n is the greater,

$$\int_0^1 x^m \frac{d^n}{dx^n}\left(x^n(1-x)^n\right) = 0.$$

11. Prove that the straight lines:

$$\left.\begin{aligned}\frac{x-2}{2}=\frac{y-3}{3}=\frac{z-5}{4}\\ \frac{x-1}{3}=\frac{y-2}{4}=\frac{z-7}{2}\end{aligned}\right\}$$

intersect, and find the equations to the straight line bisecting one of the angles between them.

12. Find the equation of the tangent plane at any point of a surface.

Prove that the plane

$$lx + my + nz = 0$$

touches the surface—

$$\sqrt{ax} + \sqrt{by} + \sqrt{cz} = 0,$$

provided that

$$\frac{a}{l} + \frac{b}{m} + \frac{c}{n} = 0.$$

13. Find the volume of the solid generated by the revolution of a loop of the curve $ay^2 = x^2\sqrt{a^2 - x^2}$ about the axis of x.

PURE AND MIXED MATHEMATICS. (Easy Problems.)

W. H. BESANT, Esq., M.A., F.R.S.

Wednesday, 23rd June 1880. 2 P.M. to 5 P.M.

Candidates are not expected to answer more than half of this paper.

1. If AB be a chord of a circle, centre C, and DE be the perpendicular let fall on AB from any point D in the circumference, prove that the angles ADE, BDC are equal.

2. Given two circles, and a point A on the circumference of one of them, draw a chord PA so that, if it be produced to cut the other circle in Q, QA may be equal to PA.

3. Find a point O within a triangle ABC, such that if AO, BO, CO meet the opposite sides in D, E, F respectively, the rectangles contained by AO, OD, by BO, OE, and by CO, OF may be equal to one another.

4. A quadrilateral can be inscribed in and circumscribed about a circle; prove that the straight lines joining the opposite points of contact of the inscribed circle are at right angles to each other.

5. On the sides of a triangle ABC, as bases, three equilateral triangles DBC, ECA, FAB are described externally; prove that the circumscribing circles of the equilateral triangles meet in a point which is also the point of intersection of the straight lines AD, BE, and CF.

6. Having given the focus and two tangents of a parabola, determine its vertex by a geometrical construction.

7. Prove that the vertices of all the right circular cones which can be made to pass through a given fixed ellipse all lie on a hyperbola.

8. Find the greatest and least values which the expression—

$$x + \sqrt{6ax - 7a^2 - x^2}$$

can have, whatever real value x may have.

9. If $2\cos\theta - \cos 2\theta = x$, and $2\sin\theta - \sin 2\theta = y$, prove that

$$(x^2 + y^2 - 3)^2 = 12 - 8x.$$

10. If A, B, C be the angles of a triangle, prove that—

$$\sin^2 A + \sin^2 B + \sin^2 C = 2 + 2\cos A \cos B \cos C.$$

If twice the square on the diameter of the circumscribing circle of the triangle is equal to the sum of the squares on the sides, prove that the triangle is right-angled.

11. Prove that—

$$\cos\frac{\pi}{11} + \cos\frac{3\pi}{11} + \cos\frac{5\pi}{11} + \cos\frac{7\pi}{11} + \cos\frac{9\pi}{11} = \frac{1}{2},$$

and that

$$\cos\frac{2\pi}{11} + \cos\frac{4\pi}{11} + \cos\frac{6\pi}{11} + \cos\frac{8\pi}{11} + \cos\frac{10\pi}{11} = -\frac{1}{2}.$$

12. If θ be less than $\frac{\pi}{4}$, prove that—

$$\tan^2\theta - \frac{\tan^4\theta}{2} + \frac{\tan^6\theta}{3} - \frac{\tan^8\theta}{4} + \ldots = \sin^2\theta + \frac{\sin^4\theta}{2} + \frac{\sin^6\theta}{3} + \ldots$$

Hence, or otherwise, prove that—

$$\frac{1}{3}\cdot\frac{1}{4} + \frac{1}{5}\cdot\frac{1}{6} + \frac{1}{7}\cdot\frac{1}{8} + \ldots = \frac{1}{2}\cdot\frac{1}{4} + \frac{1}{3}\cdot\frac{1}{8} + \frac{1}{4}\cdot\frac{1}{16} + \frac{1}{5}\cdot\frac{1}{32} + \ldots$$

13. Having given that $\sqrt{2}$ and $1 + \sqrt{-1}$ are roots of the equation

$$x^6 - 9x^5 + 26x^4 - 20x^3 - 32x^2 + 76x - 48 = 0,$$

find all its roots.

14. A heavy uniform beam is in equilibrium with one end pressing against a rough vertical wall, and the other end resting on a rough horizontal plane. The coefficient of friction at each point of contact being $\frac{1}{3}$, shew that, if θ be the inclination of the beam to the vertical when it is on the point of sliding, $\tan\theta = \frac{3}{4}$.

15. A solid smooth cylinder, of radius r, lies on a smooth horizontal plane, to which it is fastened, and an inelastic sphere, of radius $2r$, moves along the plane in a direction at right angles to the axis of the cylinder; find the condition that it may pass over the cylinder.

If the sphere be elastic, and the coefficient of elasticity be greater than $\frac{1}{8}$, prove that it cannot in any case pass over the cylinder.

16. If an elastic string be extended, prove that the potential energy thereby acquired is equal to half the tension multiplied by the extension.

An elastic string of natural length a, lying on a smooth horizontal plane, has one end fastened to a fixed point, and carries a particle at the other end, the weight of which is equal to the modulus of elasticity. If the particle be pulled along the plane away from the fixed point until the length of the string is doubled,

and then let go, prove by the principle of energy, or otherwise that $\sqrt{ga}$ is the velocity of the particle when the string has regained its natural length.

17. A stone of six pounds in weight is whirled round uniformly in a horizontal plane by a string two yards long, one end of the string being fixed; find the time of a revolution when the tension of the string is equal to the weight of $\frac{36\pi^2}{g}$ pounds.

18. A lamina in the form of an equilateral triangle is fixed on a smooth horizontal plane, and a string, the length of which is equal to the perimeter of the triangle, is fastened at one end to an angular point, and is wound round the triangle; a particle is fastened to the other end of the string, and is projected in the horizontal plane perpendicularly to the string; find the time in which the string will be again wound round the lamina.

MIXED MATHEMATICS (HIGHER).

Rev. H. W. WATSON, M.A.

Thursday, 24th June 1880. 2 P.M. to 5 P.M.

N.B.—*Candidates are not expected to answer more than two thirds of this paper.*

1. Any number of forces in one plane act upon a rigid body, find the conditions of equilibrium.

   A body is kept at rest by the forces P, Q, R, S acting along the sides AB, BC, CD, and DA of the quadrilateral ABCD. If P act from A towards B find the directions of Q, R, and S, and prove that

   $$P.R : Q.S :: AB.CD : AC.BD.$$

2. Prove that every system of forces in space may be reduced to one force and a couple whose axis coincides with the line of action of the force.

   Three equal forces act, one along the positive axis of z, another along the line $x = a$, $z = 0$ in the direction of the positive axis of y, and a third along the lines $y = a$, $z = a$, in the direction of the positive axis of x. Find the line of action of the force when reduced as above.

3. State the laws of friction.

   Two weights P and Q are connected by a string passing round a smooth tack at A in a plane inclined at the angle α to the horizon, and rest upon the plane. If μ_1 and μ_2 be their coefficients of friction, and $\mu_1^2 + \mu_2^2 = \tan^2\alpha$, prove that if P : Q :: μ_1 : μ_2 the greatest value of the angle PAQ will be $\frac{\pi}{2}$.

4. Find the centre of gravity of a circular arc, and of the solid formed by the revolution of a semicircle through an angle of 60° about a diameter.

5. Prove the equation—

$$h^2u^2\left(\frac{d^2u}{d\theta^2}+u\right)=\mathrm{P}$$

in central forces.

Find the law of force to the pole under which the curve $r = a \operatorname{cosec} 2\theta$ may be described, and prove that the time of passing from r, θ to r', θ' varies as $rr' \sin 2(\theta - \theta')$.

6. If the motion of (5) take place in a medium, such that the resistance on the particle at any instant is R, prove that, if A be the sectorial area described by the particle about the centre of force,

$$\frac{d}{d\theta}\left\{\left(\frac{d\mathrm{A}}{dt}\right)^2\right\}=-\frac{\mathrm{R}}{2u^4}\cdot\frac{d\theta}{ds}.$$

Hence, if R varies as the density and the velocity conjointly, and the density varies as the time, prove that

$$\mathrm{A}\propto\int_0^t e^{-mt^2}dt, \text{ where } m \text{ is constant.}$$

7. Find the equations of motion of a particle on a smooth surface of revolution under the action of any forces.

If the surface be a cone semi-vertical angle 45°, and the impressed force be always parallel to, or always pass through, the axis, prove that if the initial component of velocity perpendicular to the plane containing the particle and the axis be V and the initial distance from the axis be a, and if v and u be the components of velocity perpendicular and parallel to the axis at any time, and z the projection of the particle's distance from the vertex on the axis,

$$z^2(v^2-u^2)=\mathrm{V}^2a^2.$$

8. If in the last case the force be always in the direction of r, the perpendicular from the particle on the axis, and be equal to $\frac{\mu}{r^3}$, and if the square of the total initial velocity be $\frac{\mu}{a^2}$, prove that the projection of the path on the base of the cone is an equiangular spiral.

9. Find the total pressure and the vertical resolved part of the pressure upon a surface in contact with water.

A vessel of any shape contains a quantity of heterogeneous heavy liquid, prove that the vertical resolved part of the pressure upon the surface of the vessel is independent of the arrangement of the liquid, but that the total pressure generally depends upon that arrangement.

If the vessel be a right cone with vertical axis, prove that the total pressure is independent of the arrangement.

10. Find the conditions of equilibrium of a body floating in water.

If the barometer rises, will the floating body rise or fall?

11. Describe and explain the action of the syphon.

A bent tube open at both ends is exhausted of air, and its ends are plunged beneath the surfaces of two liquids of different densities contained in two different vessels.

If the surfaces of the liquids stand originally at the same level state what action will ensue.

12. Describe the common suction pump, and prove that until the water reaches the fixed valve the work done on the piston during any ascent is greater than that done on the ascending water in the pipe, friction and other imperfections being neglected.

STATICS AND DYNAMICS.

Professor JAMES STUART, M.A.

Thursday, 24th June 1880. 10 A.M. to 2 P.M.

1. Enunciate the Parallelogram of Forces. Assuming it to be true for the direction of the forces, prove that it is also true for their magnitude.

   Describe any experimental proof of the truth of the parallelogram of forces.

2. Prove that any system of forces acting on a body can be resolved into a single force and a single couple whose axis coincides with the direction of that force.

3. Explain what is meant by the coefficient of statical friction and how it can be experimentally determined.

   A ladder rests in a vertical plane between a rough horizontal pavement and a rough vertical wall, the coefficients of friction being μ and μ'; the angle which the ladder makes with the horizontal is gradually diminished; find whether the limit of friction will be reached first at the top or at the bottom.

4. Shew that the distance from the centre of the circle of the centre of gravity of a circular arc which subtends an angle 2α at the centre of the circle is $\frac{\sin \alpha}{\text{arc } \alpha} . a$ where a is the radius of the circle.

   Thence find (1) the position of the centre of gravity of the sector of a circle bounded by the arc and two radii; and (2) that of a portion of the surface of a right cone on a circular base cut off by any two planes through the axis.

5. A rectangular prism of triangular base rests with one of its faces on the ground, the other faces making angles α and α' with the horizon; and two particles of weight w and w' are placed on these two faces, connected together by a fine string passing over the edge of the prism so that the string is stretched tightly and lies in a vertical plane. The particles begin to slide: find their acceleration and the force which it is necessary to apply to the prism to keep it from moving, everything being regarded as quite smooth.

6. Find the direction in which a particle under the action of gravity must be projected from a given point with a given velocity so as to pass through another given point.

   A particle is projected with a velocity V in a direction just sufficient to make it rise to and run along a given smooth horizontal table, which is a feet vertically above and b feet horizontally distant from the point of projection. Find an expression for its distance along the table in t seconds after the instant of projection.

7. An imperfectly elastic ball is thrown from a given point inside a room with a given velocity in a given direction in a vertical plane. It hits one of the walls, rebounds therefrom, hits the floor, and rebounding therefrom hits the opposite wall; find the point where it hits that wall.

8. A particle slides down an arc of a vertical circle from rest at the extremity of the horizontal diameter; find expressions for the acceleration along and perpendicular to the arc and for the velocity and for the pressure on the arc at each point.

9. A weight of ten pounds is attached to the extremity of an india-rubber string whose unstretched length is one foot, and which is such that a weight of 20 lbs. would double its length, and is caused to rotate in a horizontal circle uniformly about the other end of the string so as to make two revolutions per second; find the length and tension of the string.

10. Prove that the time occupied by a particle in descending from rest down any arc of a vertical cycloid to the lowest point is independent of the length of the arc.

CHEMISTRY.

Professor G. D. LIVEING, F.R.S.

Friday, 25th June 1880. 2.30 P.M. to 5.30 P.M.

1. Steam is passed through porcelain tubes, (1) containing iron wire, heated to redness; (2) containing fragments of porcelain, heated to whiteness; (3) containing sodium manganate, heated to redness: state and explain the result in each case.

2. Define "molecular weight." On what grounds is the molecular weight of hydrogen said to be twice its atomic weight? If that statement be assumed to be correct, how is the molecular weight of zinc found? What grounds are there from analogy to think that hydrogen might, under some circumstances, have a smaller molecular weight than that above stated?

3. How may hydriodic and iodic acids be prepared from iodine, and iodine from each of those acids?

   The heat of combination of hydriodic acid is — 800 units, that of iodic acid + 44,000, of hydrochloric acid + 22,000, and of chloric acid + 24,000: show the significance of these facts in regard to the action of chlorine on the acids of iodine, and that of iodine on the acids of chlorine above mentioned.

4. Describe and explain the preparation of phosphorus, and of the ortho-, meta-, and pyro-phosphate of sodium.

5. Give an account of the preparation and properties of (1) marsh gas, (2) acetylene. Give examples of compounds analogous to marsh gas in constitution. What is the action of chlorine on marsh gas?

6. How may the chlorides of magnesium, zinc, copper, and iron respectively be obtained (1) in solution, (2) anhydrous? Explain the antiseptic action of zinc chloride.

7. Some substances explode by combination, some by decomposition: give examples of each, and explain what occurs, and what is the cause of explosion in each case.

8. Under what circumstances is nitre produced naturally? Explain the theory of nitrification.
   Show how the exact composition of nitric acid (hydric nitrate) and its formula is determined.

9. The combustion of 1·12 grm. of a carbon compound gave 1·67 grm of CO_2, ·86 grm. of water, and nitrogen equal in volume to one quarter of the CO_2: construct its formula, and send up all the working.

10. What is the source, and what is the chemical constitution, of palm oil? Show on what grounds palmitic acid is said to be homologous with acetic acid.

PRACTICAL CHEMISTRY.

Professor G. D. LIVEING, F.R.S.

Saturday, 26th June 1880.

Three substances, marked A, B, and C, were placed before the Candidates, and 3 hours allowed for their analysis, the following directions being given:—

1. Make a complete qualitative analysis of each of the substances marked A and B. Record every experiment made and the effect of it. When all the experiments are recorded, state what conclusion you draw from the whole; and point out which of the observed effects guide you to that conclusion. Lastly, point out whether the proof of what you have found is complete, whether any of the observed effects are at all inconsistent with your conclusion, and whether you have proved the absence of anything which you have not shown to be present.

2. Determine what elements are in the substance marked C; and explain by what indications you have proved the presence of those elements.

ELECTRICITY AND MAGNETISM.

W. GARNETT, Esq., M.A.

Wednesday, 30th June 1880. 10 A.M. to 1 P.M.

1. What is the unit of electricity generally employed in electrostatics?
   The mass of each of two pith balls is 1 gramme. The balls are suspended from the same insulated point by cotton strings 10 centimetres in length, and are electrified so that each string is inclined 30° to the vertical. How many units of electricity will each ball possess?

2. What is the electric potential of a point? Shew that the capacity of an isolated sphere is numerically equal to its radius, and find the capacity of an insulated sphere 10 centimetres in diameter, which is surrounded by a concentric sphere 10·2 cm. in diameter, the external sphere being put to earth.

3. What are electric "lines of force"? Explain how the quantity of electricity within a closed surface is indicated by the number of unit tubes of force passing through the surface.

   How is the intensity of the force in any portion of the electric field indicated by the area of the transverse sections of the tubes of force?

4. Describe the essential parts of Thomson's quadrant electrometer, and explain the action of the replenisher.

5. What is meant by the resistance of a conductor? How are the resistances of metallic conductors and of electrolytes affected by changes of temperature?

   How would you compare the resistances of two wires?

6. How does the work done per minute by a battery depend upon its electromotive force and the strength of the current?

   Express the heat generated in a wire per second in terms of—

   (*a*) Its resistance and the electromotive force between its ends.

   (*b*) Its resistance and the current traversing it.

7. A current from a battery does external work by producing motion in a magnet. How will the strength of the current be affected by the re-action of the magnet?

   State Lenz's law, and show how it may be regarded as a consequence of the principle of the conservation of energy, and the laws of the action of currents upon magnets.

8. What is the specific inductive capacity of a dielectric? Describe some method by which you would determine the specific inductive capacity of a solid, and mention the precautions necessary in order to obtain an accurate result.

   What considerations should be borne in mind in the selection of an insulating material for a submarine cable?

9. What is the self-induction of a coil? How is the character of the induced current in a secondary coil modified by the self-induction of the primary? What arrangements have been adopted in induction coils in order to overcome the difficulties arising from this cause?

10. Explain clearly why iron filings placed in a magnetic field arrange themselves in threads along the lines of magnetic force.

    In what respects does a bar magnet resemble a solenoid through which a current is passing, and in what respects does it differ from it?

11. Briefly describe some method of determining in absolute measure the horizontal intensity of the earth's magnetic force.

EXPERIMENTAL LAWS OF HEAT AND LIGHT.

W. GARNETT, Esq., M.A.

Tuesday, 29th June 1880. 2 P.M. to 5 P.M.

1. Show that the ordinary scale of temperature is a purely arbitrary one, and state the advantages of mercury in crown glass in the construction of thermometers for practical purposes.

   In what way is the freezing point changed by variations of pressure? Describe some experiment by which this change may be rendered apparent and its amount measured.

2. State the laws of evaporation and define the dew point.

   A boiler, to which a pressure gauge is attached, is filled partly with water and partly with air at 0° C. and 760 millimetre pressure. The boiler being closed the temperature is raised to 100° C. How will the gauge be affected, and what pressure will be finally registered by it?

3. Define the latent heat of evaporation of any substance. What is meant by the phrase "the total heat of steam"? How does the latent heat of steam depend on the temperature at which it is produced?

   A saturated solution of common salt is boiling rapidly, and a clean thermometer is inserted into the vessel so that its bulb is just above the surface of the solution. How will the thermometer behave?

4. Explain the principle of the indicator diagram, and show how it registers the work done during a stroke of the engine.

   Define isothermal and isentropic lines. What are the forms of these lines in the case of a perfect gas? How do the isothermal lines of a vapour which is near its point of liquefaction differ from those of a perfect gas?

5. Distinguish clearly between the conduction, convection, and radiation of heat.

   Describe the method by which the conductivity of iron at different temperatures has been determined. What is the best method of determining the temperature of the several points of the bar?

6. State the laws of the refraction of light, and explain why the bottom of a lake appears nearer to the surface than it actually is.

   Explain the refraction of light in accordance with the principle of Huyghens.

7. Describe the ordinary astronomical telescope.

   How would you experimentally determine the magnifying power of a telescope?

   Explain the possibility of constructing achromatic object glasses. To what extent may an object glass consisting of two lenses be considered achromatic?

8. Under what circumstances will two rays of light interfere? Describe some method of determining the wave length corresponding to a particular line in the spectrum.

9. What light does the spectroscope throw upon the motion of incandescent gases in the sun?

Explain fully how the velocity with which a star is approaching or receding from the earth can be determined.

What is the effect of very high temperature upon the spectral lines of a gas?

10. Describe the best method you know for determining the plane of polarisation of polarised light.

How would you obtain circularly polarised light?

MECHANICAL PHILOSOPHY.

Professor JAMES STUART, M.A.

Saturday, 19th June 1880. 2 P.M. to 5 P.M.

1. What is meant by the absolute unit of Force? What is the meaning of the word "absolute" in this phrase?

Explain any experiments by which the weight of a given mass at a given place may be accurately compared with the absolute unit of force.

2. If the unit of time be a year instead of a second, and the unit of length be the distance of the sun from the earth instead of a foot, what must be the unit of mass in order that the ratio of the weight of a given mass to the absolute unit of force may be unaltered?

3. Explain the construction and use of a vernier. Given the length of a division on the scale, how would you, by a geometrical construction, obtain the length of a division on the vernier?

4. Describe either Watts' parallel motion or any form of turbine or rotary pump.

5. Draw an indicator diagram of a high pressure engine in which the steam is cut off at the middle of the stroke and in which there is considerable cushioning.

Taking this or any other indicator diagram, find roughly the horse power of the engine, it being given that the crank shaft makes 30 complete revolutions per minute, that the diameter of the piston is 2 feet, the length of the stroke 4 feet, and the highest pressure indicated by your diagram 50 lbs. per square inch.

6. How can the horse power required to drive a given machine be ascertained? How can the work done in driving the machine be registered?

7. What is meant by the centre of oscillation of a given pendulum? How can the length of the simple equivalent pendulum be accurately ascertained?

8. Describe the number of teeth and arrangement of any set of wheels which will enable a clock to be constructed, when the barrel makes 10 revolutions in a week, the pendulum beats quarter seconds, the escape wheel has 30 teeth, and in which no wheels with a greater number of teeth than 100 or with a smaller number than 12 are to be used.

9. Describe a transit instrument. What is meant by the illumination of the wires and by the illumination of the field? What are their respective objects? How are they respectively effected?

10. What is an azimuthal compass? What is its use?

11. What is meant by the aberration of a fixed star? How can the coefficient of aberration be ascertained?

12. How can the rate at which a star is approaching us be determined from spectroscopic observations?

LOGIC.

Professor CAMPBELL FRASER.

Tuesday, 29th June 1880. 10 A.M. to 1 P.M.

1. "People can reason without the help of Logic." Why is this not a sufficient objection to the study? In your answer show distinctly why Logic should be studied.

2. Give the rules of logical definition and division, with an example of the violation of each rule.

3. Define, and if you can, exemplify:—*summum genus*, *infima species*, *syllogism*, *undistributed middle*, *sorites*, *epicheirema*.

4. Explain *ignoratio elenchi*, and give an example. Why was it so named? Distinguish and illustrate arguments *ad hominem*, *ad populum*, and *ad verecundiam*, showing when they are and when they are not fallacious.

5. "Perfect induction is demonstrative and syllogistic; imperfect induction is neither." Explain the difference between perfect and imperfect induction, and examine the truth of this assertion.

6. Is it possible for us to form true universal propositions about facts if we have not actually observed all the individuals designated by the subject of the proposition? If so, how?

7. Why is it that one should not regard night as the cause, nor even as a universal condition, of day? Explain "cause" and "condition."

8. Taking the "evolution" or any other proposed hypothesis, how should one proceed (*a*) to show whether it satisfies the conditions of a legitimate hypothesis sufficiently to entitle it to investigation, and (*b*) to test it with a view to its acceptance or rejection as a truth of science.

9. State and exemplify some of the chief causes of error.

ELEMENTS OF POLITICAL ECONOMY.

Professor CAMPBELL FRASER.

Monday, 28th June 1880. 10 A.M. to 1 P.M.

1. Define Political Economy. State the parts into which it may be divided, and show how they are mutually related.

2. What is meant by Wealth? Distinguish Wealth from Capital. Explain the division of Wealth into Rent, Wages, and Profits.

3. What is Money, and what its chief functions? Mention, with reasons, the qualities a thing must possess in order to discharge those functions, and name objects fitted to serve as Money.

4. Is the labour of (*a*) schoolmasters, (*b*) artists, (*c*) men of letters, or of any of those classes, productive of wealth? Explain in your answer how you distinguish productive from unproductive labour.

5. Explain the division of labour, and give the law of its division. What are the economic advantages of this division among different (*a*) persons, (*b*) localities or cities, (*c*) nations? State and consider any of its disadvantages.

6. What is meant by the co-operative system of industry? Show ways in which this system may affect, for good or for evil, the productiveness of labour; and mention any moral benefits, or the opposite, in which it may be expected to issue.

7. "Some are apt to imagine, when they see a rich man, whose income is a hundred times as much as suffices to maintain a poor man's family, that if he were stripped of all, and his wealth divided, a hundred poor families might thus obtain subsistence; which it is plain would not be the case, even when the rich man's income was spent in ostentatious and selfish luxury."
   Examine the question here raised, and show how expenditure in luxuries affects the economic prosperity of society.

8. What causes different rates of Wages in different employments, and by what methods might Wages be raised?

9. What is the law of Rent? How is the economic value of a piece of land discovered?

10. Explain the law of Population according to Malthus, and refer to the evidence on which it rests. Examine conclusions which have been drawn from it.

12. Give the third person singular of the aorist Parasmaipada of the casual of नी and मृज्.

13. Give the past passive participles of यज्, पच्, दा, क्रम्, and खन्.

14. Give the third person singular of the present Parasmaipada of the desiderative of कृ, जि, and धा.

15. Give instances where the terminations of certain words are changed at the end of Tatpurusha and Karmadhâraya compounds. Suggest a reason for it.

16. When does the base before the gerundial affix *ya* differ from that before the passive sign *ya*?

17. Give the enclitic forms of the personal pronouns, and describe their peculiar construction in a sentence.

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18. *Translate into Sanskrit:*

a. He told the boy that his father was dead.

b. The king saw the horse and having mounted it went into the forest.

c. In the morning they saw some shepherds in the field who set milk and fruits before them. The princess wondered that she did not see a palace ready for her reception and a table covered with delicacies; but being faint and hungry she eagerly drank the milk and ate the fruits.

SANSKRIT (2).

Professor E. B. COWELL.

Wednesday, 30th June 1880. 2 P.M. to 5 P.M.

Translate into English:

I.

ऊर्ध्वदृष्टिर् ध्यानपरा बभूवोन्मत्तदर्शना।
पाण्डुवर्णा क्षणेनाथ हृच्छयाविष्टचेतना॥
न शय्यासनभोगेषु रतिं विन्दति कर्हिचित्।
न नक्तं न दिवा शेते हा हेति रुदती पुनः॥

Parse the underlined words.

II.

अस्ति भागीरथीतीरे गृध्रकूटनाम्नि पर्वते महान् पर्कटीवृक्षः। तस्य कोटरे दैवदुर्विपाकान्नलितनखनयनो जरद्गवनामा गृध्रः प्रतिवसति। अथ कृपया तज्जीवनाय तद्वृक्षवासिनः पक्षिणः स्वाहारात्किंचित्किंचिदुद्धृत्य ददति। तेनासौ जीवति। अथ कदाचिद्दीर्घकर्णनामा मार्जारः पक्षिशावकान्भक्षितुं तत्रागतः। ततस्तमायान्तं दृष्ट्वा पक्षिशावकैर्भयार्तैः कोलाहलः कृतः तच्छ्रुत्वा जरद्गवेनोक्तम्। को ऽयमायाति। दीर्घकर्णो गृध्रमवलोक्य सभयमाह। हा हतो ऽस्मि।

तावद्भयस्य भेतव्यं यावद्भयमनागतम्।
आगतं तु भयं वीक्ष्य नरः कुर्याद्यथोचितम्॥

Hitopadeśa.

III.

पानीयं वा निरायासं स्वाद्वन्नं वा भयोत्तरम्।
विचार्य खलु पश्यामि तत्सुखं यत्र निर्वृतिः॥

इत्यालोच्याहं निर्जनवनमागतः

वरं वनं व्याघ्रगजेन्द्रसेवितं द्रुमालयः पक्वफलाम्बुभोजनम्।
तृणानि शय्या परिधानवल्कलं न बन्धुमध्ये धनहीनजीवनम्॥

Ibid.

IV.

अवज्ञानाद्राज्ञो भवति मतिहीनः परिजनः
ततस्तत्प्रामाण्याद्भवति न समीपे बुधजनः।
बुधैस्त्यक्ते राज्ये न हि भवति नीतिर्गुणवती
विपन्नायां नीतौ सकलमवशं सीदति जगत्॥

Ibid.

V.

A certain King's family priest, when performing some religious rites, observes that his master always looks on with a smile; he inquires the reason.

पुरोहित उवाच।

पुण्याहवाचने नित्यं धर्मकृत्येषु चासकृत्।
शान्तिहोमेषु च सदा किं त्वं हससि वीक्ष्य माम्॥
सव्रीडं वै भवति हि मनो मे हसता त्वया।
कौतूहलं मे सुभृशं तत्त्वेन कथयस्व वै।

राजोवाच।

एवमुक्ते त्वया विप्र यदवाच्यं भवेदपि।
अवश्यमेव वक्तव्यं शृणुष्वैकमना द्विज॥
पूर्वदेहे यथावृत्तं तन्निबोध द्विजोत्तम।
जातिं स्मराम्यहं ब्रह्मन्नवधानेन मे शृणु॥
शूद्रोऽहमभवं पूर्वं तपसा भृशसंयुतः।
ऋषिरत्यतपास् त्वं च तदाऽभूर्द्विजसत्तम॥
प्रीयता हि तदा ब्रह्मन् ममानुग्रहबुद्धिना।
पितृकार्ये* त्वया पूर्वमुपदेशः कृतोऽनघ॥
एतेन कर्मदोषेण पुरोधास् त्वमजायथाः।
अहं राजा च विप्रेन्द्र पश्य कालस्य पर्ययम्॥
मत्कृतस्योपदेशस्य त्वयावाप्तमिदं फलम्।
एतस्मात् कारणाद्ब्रह्मन् प्रहसे त्वां द्विजोत्तम॥

Mahâbhârata.

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* The offerings to the *manes*.

VI.

सहस्रात्मा मया यो व ऋादिदेव उदाहृतः ।
मुखबाहूरुपज्जाः स्युस्तस्य वर्णा यथाक्रमम् ॥
पृथिवी पादतस्तस्य शिरसो द्यौरजायत ।
नस्तः प्राणा दिशः श्रोचात् स्पर्शाद्वायुर्मुखाच्छिखी ॥
मनसश्चन्द्रमा जातश्चक्षुषश्च दिवाकरः ।
जघनादन्तरिक्षं च जगच्च सचराचरम् ॥
यद्येवं स कथं ब्रह्मन् पापयोनिषु जायते ।
ईश्वरः स कथं भावैरनिष्टैः संप्रयुज्यते ॥

Yâjnavalkya.

VII.

यावद्धि तदात्मविषयमज्ञानं नापनीयते तावदयं कर्मफलरागद्वेषादिस्वाभाविकदोषप्रयुक्तः शास्त्रविहित-प्रतिषिद्धातिक्रमेणापि प्रवर्तमानो मनोवाक्कायैर् दृष्टा-दृष्टानिष्टसाधनान्यधर्मसंज्ञकानि कर्माण्युपचिनोति। ततः स्थावरान्ताऽधोगतिः ।

Samkarâchârya.

CIVIL SERVICE OF INDIA.

Open Competition of June 1880.

TABLE OF MARKS.

In pursuance of paragraph 6. of the Regulations (*see* page 5.), a deduction of 100 has been made from the marks assigned in each subject, except English Composition and Mathematics.

INDIA CIVIL SERVICE.—EXAMINATION OF 1880.—TABLE OF MARKS.—SELECTED CANDIDATES.

Order of Merit.	No. in Examination.	NAME.	Age on 1st January 1880.	NUMBER OF MARKS OBTAINED.																		
				ENGLISH			Greek.	Latin.	French.	German.	Italian.	Mathematics.	NATURAL SCIENCE.					Logic.	Political Economy.	Sanskrit.	Arabic.	Total.
				Composition.	History.	Literature.							Chemistry.	Electricity and Magnetism.	Heat and Light.	Mechanical Philosophy and Astronomy.						
				Maximum Number of Marks.																		
				300	300	300	600	800	500	500	400	1,000	500	300	300	300	300	300	500	500		
1	75	Earle; Archdale	18	191	—	156	256	582	250	199	124	279	—	—	—	—	—	—	—	—	2,037
2	24	Saunders; Arthur Leslie	17	200	—	—	200	518	213	—	—	717	—	—	—	95	—	—	—	—	1,943
3	13	Baker; Arthur	16	242	140	115	387	612	—	211	71	138	—	—	—	—	—	—	—	—	1,916
4	136	Fox-Strangways; Maurice Walter	17	221	—	—	293	586	190	—	114	411	—	—	—	0	—	—	—	—	1,815
5	177	Merk; Walter Henry	18	240	130	136	256	558	116	242	—	—	—	—	—	—	—	—	108	—	—	1,786
6	113	Guthrie; William James	18	220	—	68	199	390	207	202	—	378	—	27	—	—	83	—	—	—	1,774
7	122	Crump; Charles George	17	171	21	—	199	459	183	—	—	529	105	—	77	—	—	—	—	—	1,744
8	72	Brereton; Reginald Hugh	18	197	94	99	248	547	185	—	—	346	—	—	—	—	—	—	—	—	1,716
9	66	Rice; William George Louis	18	151	75	72	40	281	133	—	97	660	—	—	—	0	8	—	186	—	1,703
10	133	Carey; Lionel Slade	18	137	—	—	162	461	250	—	—	674	—	—	—	0	—	—	—	—	1,684
11	18	Hurry; Arnold Eardley	18	147	53	70	233	498	195	206	53	208	—	—	—	—	—	—	—	—	1,663
12	88	Moore; Ross Arthur Leslie	18	258	98	142	267	531	138	98	—	129	—	—	—	—	—	—	—	—	1,661
13	135	O'Brien; Peter Henry	17	153	—	—	329	599	210	210	142	—	—	—	—	—	—	—	—	—	1,643

India Civil Service.—Examination of 1880.—Table of Marks.—Selected Candidates—*continued.*

Order of Merit.	No. in Examination.	NAME.	Age on 1st January 1880.	NUMBER OF MARKS OBTAINED.																	
				ENGLISH									NATURAL SCIENCE.								
				Composition.	History.	Literature.	Greek.	Latin.	French.	German.	Italian.	Mathematics.	Chemistry.	Electricity and Magnetism.	Heat and Light.	Mechanical Philosophy and Astronomy.	Logic.	Political Economy.	Sanskrit.	Arabic.	Total.
				Maximum Number of Marks.																	
				300	300	300	600	800	500	500	400	1,000	500	300	300	300	300	300	500	500	
14	34	Colvin; Elliot Graham	18	179	21	—	313	464	154	—	108	385	—	—	—	0	—	—	—	—	1,624
15	89	Fleming; Allan Stopford	18	154	—	—	211	424	247	126	110	351	0	—	—	0	—	—	—	—	1,623
16	48	Tucker; Alexander Lauzun Pendock.	18	223	21	120	387	546	111	128	—	81	—	—	—	—	—	—	—	—	1,617
17	166	Todd-Naylor; Henry Paul	18	226	141	122	79	428	146	—	—	238	—	—	—	—	92	126	—	—	1,598
18	9	Gates; Frank Campbell	17	219	130	121	194	453	117	—	—	363	—	—	—	—	—	—	—	—	1,597
19	165	Maconochie; Alexander Francis	17	175	54	76	290	468	202	208	95	—	—	—	—	—	—	—	—	—	1,588
20	67	Davis; Arthur William	18	148	—	—	277	552	128	—	89	375	—	—	—	0	—	—	—	—	1,569
21	143	Womack; Arthur Shaw	18	131	—	—	132	409	160	—	—	606	—	—	—	62	69	—	—	—	1,568
22	78	Doderet; William	17	144	111	—	146	278	178	259	—	449	—	—	—	—	—	—	—	—	1,565
23	51	Foster; Herbert William	17	189	—	—	—	153	53	161	—	661	185	85	—	—	—	77	—	—	1,564
24	147	Bagnell; Henry William James	18	170	—	61	130	592	219	201	75	110	—	—	—	—	—	—	—	—	1,558
25	95	Horne; William Ogilvie	17	153	114	125	316	554	75	156	41	—	—	—	—	—	—	—	—	—	1,534
26	176	Shipley; Reginald Heber	18	202	1	87	106	461	291	268	117	—	—	—	—	—	—	—	—	—	1,533
27	108	Murdoch; David Doig	18	139	—	—	146	313	—	—	—	791	—	—	—	91	39	—	—	—	1,519

OPEN COMPETITION OF JUNE 1880.—TABLE OF MARKS.—CANDIDATES NOT SELECTED.

Order of Merit.	No. in Examination.	NUMBER OF MARKS OBTAINED.																	
		ENGLISH			Greek.	Latin.	French.	German.	Italian.	Mathematics.	NATURAL SCIENCE.				Logic.	Political Economy	Sanskrit.	Arabic.	Total.
		Composition.	History.	Literature.							Chemistry.	Electricity and Magnetism.	Heat and Light.	Mechanical Philosophy and Astronomy.					
		Maximum Number of Marks.																	
		300	300	300	600	800	500	500	400	1,000	500	300	300	300	300	300	500	500	
28	146	218	106	108	68	440	130	75	106	128	—	—	—	—	58	70	—	—	1,507
29	173	127	—	—	127	484	155	205	82	289	—	—	—	—	—	—	—	—	1,469
30	91	157	88	85	360	499	54	170	11	—	—	—	—	—	—	—	—	—	1,424
31	111	190	19	63	306	500	99	—	—	30	216	—	—	—	—	—	—	—	1,423
32	182	245	73	98	136	349	39	—	—	329	—	—	—	45	73	—	—	—	1,387
33	59	173	8	5	371	547	35	—	—	232	—	—	—	—	—	—	—	—	1,371
34	142	138	—	—	79	370	166	—	—	367	223	—	22	—	—	—	—	—	1,365
35	29	238	47	61	75	362	—	—	—	569	—	—	12	0	—	—	—	—	1,364
36	7	147	—	—	257	544	162	—	64	188	—	—	—	—	—	—	—	—	1,362
37	96	186	94	132	137	459	129	154	48	—	—	—	—	—	—	—	—	—	1,339
38	159	143	—	—	118	393	258	—	65	320	—	—	—	—	—	—	—	—	1,297
39	87	120	24	40	187	309	244	222	33	106	—	—	—	—	—	—	—	—	1,294
40	27	96	0	—	176	329	152	206	—	317	—	—	—	—	—	—	—	—	1,276
	46	170	0	—	78	348	110	—	—	488	82	—	...	—	—	—	—	—	1,276
42	42	197	76	31	132	451	82	62	16	245	—	—	—	—	—	—	—	—	1,272

Open Competition of June 1880.—Table of Marks.—Candidates not selected—*continued.*

Order of Merit.	No. in Examination.	NUMBER OF MARKS OBTAINED.																	
		ENGLISH			Greek.	Latin.	French.	German.	Italian.	Mathematics.	NATURAL SCIENCE.				Logic.	Political Economy	Sanskrit.	Arabic.	Total.
		Composition.	History.	Literature.							Chemistry.	Electricity and Magnetism.	Heat and Light.	Mechanical Philosophy and Astronomy.					
		Maximum Number of Marks.																	
		300	300	300	600	800	500	500	400	1,000	500	300	300	300	300	300	500	500	
43	154	146	0	8	150	480	0	156	—	350	—	—	—	—	—	—	—	—	1,270
44	17	200	56	70	207	501	74	—	40	118	—	—	—	—	—	—	—	—	1,266
45	22	191	32	89	203	519	99	—	—	125	—	—	—	—	—	—	—	—	1,258
46	53	184	93	70	131	576	87	0	—	302	—	—	—	—	—	—	—	—	1,243
47	102	182	68	47	139	381	179	156	89	—	—	—	—	—	—	—	—	—	1,241
48	15	263	138	116	113	297	—	—	—	70	—	—	—	—	135	105	—	—	1,237
49	110	182	—	—	220	384	115	—	52	278	—	—	—	—	—	—	—	—	1,231
50	4	137	0	—	—	434	272	192	177	12	—	—	—	—	—	—	—	—	1,224
51	139	156	—	63	105	390	56	186	—	265	—	—	—	—	—	—	—	—	1,221
52	129	140	79	68	65	340	—	—	—	398	87	0	—	—	—	43	—	—	1,220
	83	201	86	41	162	355	—	183	—	192	—	—	—	—	—	—	—	—	1,220
	149	192	—	63	174	536	—	100	—	111	—	—	—	—	44	—	—	—	1,220
55	162	145	30	48	279	551	8	—	—	71	—	—	—	—	—	87	—	—	1,219
56	5	136	97	127	—	228	239	243	79	—	—	—	—	—	—	59	—	—	1,208
57	167	89	—	—	—	363	133	—	—	479	140	—	—	3	—	—	—	—	1,207
58	160	203	—	72	104	334	140	—	88	229	—	—	—	—	—	—	—	—	1,170

Open Competition of June 1880.—Table of Marks.—Candidates not selected—*continued.*

Order of Merit.	No. in Examination.	NUMBER OF MARKS OBTAINED.																	
		ENGLISH			Greek.	Latin.	French.	German.	Italian.	Mathematics.	NATURAL SCIENCE.				Logic.	Political Economy	Sanskrit.	Arabic.	Total.
		Composition.	History.	Literature.							Chemistry.	Electricity and Magnetism.	Heat and Light.	Mechanical Philosophy and Astronomy.					
		Maximum Number of Marks.																	
		300	300	300	600	800	500	500	400	1,000	500	300	300	300	300	300	500	500	
59	106	82	—	—	162	370	62	119	—	348	—	—	—	—	—	—	—	—	1,143
60	104	150	9	5	136	540	85	162	—	47	—	—	—	—	—	—	—	—	1,134
61	2	171	26	15	212	438	—	136	40	94	—	—	—	—	—	—	—	—	1,132
62	43	197	—	47	189	352	99	—	70	159	—	—	—	—	—	—	—	—	1,113
63	178	152	13	12	301	545	—	0	—	41	—	—	—	—	42	—	—	—	1,106
64	79	95	—	—	—	362	112	—	130	375	—	—	—	13	—	—	—	—	1,087
65	148	185	—	141	197	340	149	—	—	66	—	—	—	—	—	—	—	—	1,078
66	153	122	0	0	144	459	150	161	—	41	—	—	—	—	—	—	—	—	1,077
67	115	150	—	—	131	433	230	—	—	132	0	—	—	0	—	—	—	—	1,076
68	179	145	—	—	114	350	6	—	—	371	83	—	0	—	—	—	—	—	1,069
69	155	160	13	0	—	320	145	176	68	175	—	—	—	—	0	—	—	—	1,057
70	100	200	—	75	49	325	137	—	49	217	—	—	—	—	—	—	—	—	1,052
71	184	191	—	71	—	312	103	162	—	197	—	—	—	—	—	—	—	—	1,036
72	169	150	24	0	—	234	114	115	—	357	—	—	0	0	—	33	—	:	1,027
73	81	143	—	—	129	355	80	2	—	314	0	—	—	—	—	—	—	—	1,023
	56	156	0	—	—	—	211	184	75	397	0	—	—	—	—	—	—	—	1,023

Open Competition of June 1880.—Table of Marks.—Candidates not selected—*continued*.

Order of Merit.	No. in Examination.	NUMBER OF MARKS OBTAINED.																	
		ENGLISH			Greek.	Latin.	French.	German.	Italian.	Mathematics.	NATURAL SCIENCE.				Logic.	Political Economy	Sanskrit.	Arabic.	Total.
		Composition.	History.	Literature.							Chemistry.	Electricity and Magnetism.	Heat and Light.	Mechanical Philosophy and Astronomy.					
		Maximum Number of Marks.																	
		300	300	300	600	800	500	500	400	1,000	500	300	300	300	300	300	500	500	
75	138	188	51	109	40	311	100	128	51	—	—	—	—	—	—	39	—	—	1,017
76	183	148	0	26	230	504	51	—	—	53	—	—	—	—	—	1	—	—	1,013
77	26	115	—	—	125	442	120	126	0	70	—	—	—	—	—	—	—	—	998
78	77	183	—	—	177	469	110	—	—	36	—	—	—	—	—	—	—	—	975
79	112	75	—	0	113	481	0	—	—	293	0	—	—	—	—	—	—	—	962
80	23	167	—	98	119	325	67	—	—	183	—	—	—	—	0	—	—	—	959
81	70	157	—	—	116	311	163	3	28	178	—	—	—	—	—	—	—	—	956
82	114	172	—	—	182	298	61	—	50	94	—	—	—	—	—	91	—	—	948
	94	145	—	—	—	168	—	—	—	421	47	—	—	59	—	108	0	—	948
84	172	67	—	—	7	375	94	—	—	384	—	—	—	14	0	—	—	—	941
85	152	169	—	—	146	517	51	—	—	56	—	—	—	—	—	—	—	—	939
86	187	168	90	32	182	332	60	—	—	24	—	—	—	—	—	34	—	—	922
87	54	106	—	—	99	419	62	—	—	229	—	—	—	—	—	—	—	—	915
88	126	147	—	—	—	0	298	—	3	329	59	—	—	0	—	72	—	—	908
89	120	114	—	—	—	170	75	116	—	411	0	—	—	0	18	—	—	—	904
90	132	172	0	0	—	—	231	94	—	230	84	0	—	—	43	49	—	—	903

19,043

Open Competition of June 1880.—Table of Marks.—Candidates not selected—*continued.*

Order of Merit.	No. in Examination.	NUMBER OF MARKS OBTAINED.																	
		ENGLISH.			Greek.	Latin.	French.	German.	Italian.	Mathematics.	NATURAL SCIENCE.				Logic.	Political Economy	Sanskrit.	Arabic.	Total.
		Composition.	History.	Literature.							Chemistry.	Electricity and Magnetism.	Heat and Light.	Mechanical Philosophy and Astronomy.					
		Maximum Number of Marks.																	
		300	300	300	600	800	500	500	400	1,000	500	300	300	300	300	300	500	500	
91	63	150	58	42	145	413	52	—	—	35	—	—	—	—	—	—	—	—	895
92	66	127	—	—	69	374	137	—	31	155	—	—	—	—	—	—	—	—	893
93	68	162	6	—	—	238	183	138	0	159	—	—	—	—	—	—	—	—	881
94	65	123	—	—	149	319	85	—	—	204	—	—	—	0	—	—	—	—	880
95	80	172	—	—	0	298	11	—	—	168	—	—	—	—	110	113	—	—	872
	64	132	—	—	143	262	76	—	0	259	—	—	—	—	—	—	—	—	872
97	25	57	—	—	157	428	70	62	—	93	—	—	—	—	—	—	—	—	867
98	125	155	—	0	121	417	1	—	—	158	—	—	—	—	—	—	—	—	852
99	127	142	0	0	138	497	0	—	—	73	—	—	—	—	—	—	—	—	850
100	131	149	33	98	83	329	23	106	—	27	—	—	—	—	—	—	—	—	848
	103	173	0	10	174	409	55	—	—	—	—	—	—	—	—	27	—	—	848
102	57	160	0	26	0	192	26	—	—	393	—	—	—	0	0	50	—	—	847
103	20	192	—	40	55	289	60	—	0	198	—	—	—	0	—	—	—	—	834
104	6	137	0	35	178	307	27	144	—	0	—	—	—	—	—	—	—	—	828
105	157	128	0	20	—	—	88	135	—	386	57	—	—	0	0	—	—	—	814
106	97	116	—	—	52	285	107	9	—	237	—	—	—	—	—	—	—	—	806

Open Competition of June 1880.—Table of Marks.—Candidates not selected—*continued.*

Order of Merit.	No. in Examination.	NUMBER OF MARKS OBTAINED.																	
		ENGLISH			Greek.	Latin.	French.	German.	Italian.	Mathematics.	NATURAL SCIENCE.				Logic.	Political Economy	Sanskrit.	Arabic.	Total.
		Composition.	History.	Literature.							Chemistry.	Electricity and Magnetism.	Heat and Light.	Mechanical Philosophy and Astronomy.					
		Maximum Number of Marks.																	
		300	300	300	600	800	500	500	400	1,000	500	300	300	300	300	300	500	500	
107	171	116	10	—	74	380	84	—	—	122	—	—	—	—	—	—	—	—	786
108	19	181	28	69	1	220	74	82	0	107	—	—	—	—	14	—	—	—	776
109	74	169	3	14	0	112	18	—	—	357	—	—	—	0	—	85	—	—	758
110	82	167	0	0	66	301	87	—	—	126	—	—	—	—	—	—	—	—	747
111	10	121	0	25	74	345	—	150	31	—	—	—	—	—	—	—	—	—	746
	130	169	11	—	62	217	152	—	—	135	—	—	—	—	—	—	—	—	746
113	16	189	18	37	106	202	66	80	0	45	—	—	—	—	—	—	—	—	743
114	47	148	—	—	—	86	216	130	—	156	—	—	—	—	—	—	—	—	736
	8	133	0	0	137	360	0	0	—	106	—	—	—	—	—	—	—	—	736
116	170	198	104	67	7	227	75	—	—	57	—	—	—	—	—	—	—	—	735
117	98	—	108	—	105	407	25	—	—	72	—	—	—	—	—	17	—	—	734
	44	186	17	40	—	—	—	—	—	355	0	—	0	—	60	76	—	—	734
119	128	102	24	—	—	44	100	—	—	376	0	—	0	—	—	76	—	—	722
120	119	134	0	16	106	221	80	154	—	—	—	—	—	—	—	—	—	—	711
121	62	124	—	—	65	368	107	—	20	12	—	—	—	—	—	—	—	—	696

Open Competition of June 1880.—Table of Marks.—Candidates not selected—*continued.*

Order of Merit.	No. in Examination.	NUMBER OF MARKS OBTAINED.																	
		ENGLISH			Greek.	Latin.	French.	German.	Italian.	Mathematics.	NATURAL SCIENCE.				Logic.	Political Economy	Sanskrit.	Arabic.	Total.
		Composition.	History.	Literature.							Chemistry.	Electricity and Magnetism.	Heat and Light.	Mechanical Philosophy and Astronomy.					
		Maximum Number of Marks.																	
		300	300	300	600	800	500	500	400	1,000	500	300	300	300	300	300	500	500	
122	99	135	—	—	107	212	100	—	0	75	—	—	—	—	—	66	—	—	695
123	41	54	—	—	26	266	164	0	—	171	—	—	—	0	—	—	—	—	681
124	93	139	—	—	97	267	79	34	—	43	—	—	—	—	—	—	—	—	659
	190	105	—	—	—	161	112	116	0	165	—	—	—	—	—	—	—	—	659
	73	163	11	42	48	395	0	0	—	—	—	—	—	—	—	—	—	—	659
127	61	97	9	38	—	336	0	—	—	172	0	—	—	—	—	—	—	—	652
128	117	152	92	33	—	86	49	—	0	188	—	—	—	0	44	7	—	—	651
129	55	140	0	—	—	107	—	0	—	397	—	—	—	—	—	—	—	—	644
130	49	96	0	0	154	256	78	0	—	47	0	—	0	—	—	—	—	—	631
131	189	151	0	0	98	287	32	—	—	40	—	—	—	—	—	—	—	—	608
132	1	112	0	16	—	117	25	0	—	325	0	—	—	—	—	—	—	—	595
133	14	161	—	—	39	248	25	—	—	119	0	—	—	—	—	—	—	—	592
134	28	141	29	35	—	0	0	—	—	307	55	—	—	—	0	24	—	—	591
135	123	100	0	19	132	303	20	—	—	—	—	—	—	—	—	—	—	—	574
136	116	142	50	—	—	—	—	—	—	288	11	—	—	—	58	—	18	—	567

Open Competition of June 1880.—Table of Marks.—Candidates not selected—*continued.*

Order of Merit.	No. in Examination.	NUMBER OF MARKS OBTAINED.																				
		ENGLISH						NATURAL SCIENCE.														Total.
		Composition.	History.	Literature.	Greek.	Latin.	French.	German.	Italian.	Mathematics.	Chemistry.	Electricity and Magnetism.	Heat and Light.	Mechanical Philosophy and Astronomy.	Logic.	Political Economy	Sanskrit.	Arabic.				
		800	800	800	600	800	500	600	400	1,000	500	500	500	500	500	500	500	500				
137	103	93	0	0	0	254	39	22	0	154	—	—	—	—	—	0	—	—	563			
138	191	123	32	37	—	—	116	180	—	73	—	—	—	—	—	—	—	—	560			
139	84	84	0	—	—	29	81	263	—	88	0	—	—	—	—	—	—	—	545			
140	101	117	16	—	0	79	—	—	—	223	0	—	—	—	30	—	—	—	535			
141	81	132	—	—	—	182	47	0	—	149	—	—	—	—	17	—	—	—	527			
142	11	107	—	—	0	196	153	—	—	62	0	—	—	—	—	—	—	—	518			
143	198	146	4	0	0	341	17	—	—	—	—	—	—	—	—	—	—	—	508			
144	150	126	0	0	0	113	73	—	—	184	0	—	0	—	—	—	—	—	496			
145	188	76	—	—	0	275	64	24	—	43	—	—	—	—	—	—	—	—	482			
146	85	151	—	34	0	151	139	—	—	19	0	—	—	—	—	—	—	—	474			
147	164	165	8	70	0	174	88	—	—	—	—	—	—	—	—	—	—	—	470			
148	141	103	0	4	—	0	111	—	—	244	—	0	—	—	—	—	—	—	462			
149	137	93	—	—	0	351	13	—	—	20	—	—	—	—	—	—	—	—	456			
150	76	66	0	0	—	70	106	101	—	101	—	—	—	—	—	—	—	—	446			
151	12	110	—	—	0	130	119	35	0	40	—	—	—	—	—	—	—	—	443			

Open Competition of June 1880.—Table of Marks.—Candidates not selected—*continued*.

Order of Merit.	No. in Examination.	NUMBER OF MARKS OBTAINED.																	
		English.			Greek.	Latin.	French.	German.	Italian.	Mathematics.	Natural Science.				Logic.	Political Economy	Sanskrit.	Arabic.	Total.
		Composition.	History.	Literature.							Chemistry.	Electricity and Magnetism.	Heat and Light.	Mechanical Philosophy and Astronomy.					
		Maximum Number of Marks.																	
		300	300	300	600	800	500	500	400	1,000	500	300	300	300	300	300	500	500	
152	35.	68	0	—	—	0	9	70	—	228	47	0	—	—	—	15	—	—	437
	21	132	—	—	37	195	31	—	0	42	—	—	—	—	—	—	—	—	457
154	194	86	0	0	33	290	0	—	—	—	—	—	—	—	—	—	—	—	409
155	33	74	—	—	—	0	141	115	0	64	—	—	—	—	—	—	—	—	394
156	151	104	—	—	0	214	20	—	—	53	—	—	—	—	—	—	—	—	391
157	121	144	—	—	0	82	0	—	—	161	—	0	—	0	—	—	—	—	387
158	174	52	—	—	—	—	110	74	0	149	—	—	—	—	—	—	—	—	385
159	105	42	—	—	21	255	66	—	—	—	—	—	—	—	—	—	—	—	384
160	168	97	—	—	0	248	7	—	0	22	—	—	—	—	—	—	—	—	374
161	50	152	20	0	—	0	0	—	—	189	—	—	—	—	—	—	—	—	361
162	37	90	9	0	—	—	38	78	—	144	0	—	—	—	—	—	—	—	359
163	71	104	0	—	0	138	45	—	—	62	0	—	—	—	—	—	—	—	349
164	60	129	7	14	—	0	0	—	—	82	—	0	0	—	90	7	—	—	329
165	145	68	0	0	0	75	92	—	—	94	—	—	—	—	—	—	—	—	324
166	107	—	0	—	23	181	20	—	—	96	—	—	—	—	—	—	—	—	320

Open Competition of June 1880.—Table of Marks.—Candidates not selected—*continued*.

Order of Merit.	No. in Examination.	NUMBER OF MARKS OBTAINED.																	
		English			Greek.	Latin.	French.	German.	Italian.	Mathematics.	Natural Science.				Logic.	Political Economy	Sanskrit.	Arabic.	Total.
		Composition.	History.	Literature.							Chemistry.	Electricity and Magnetism.	Heat and Light.	Mechanical Philosophy and Astronomy.					
		Maximum Number of Marks.																	
		300	300	300	600	800	500	500	400	1,000	500	300	300	300	300	300	500	500	
167	8	111	—	—	1	106	—	—	—	89	12	—	—	—	—	—	—	—	319
168	86	104	0	0	—	117	94	—	—	—	—	—	—	—	—	—	—	—	315
169	181	122	0	0	—	0	46	140	—	—	—	—	—	—	0	3	—	—	311
170	90	41	—	—	—	0	0	—	—	259	—	—	—	0	—	—	—	—	300
171	58	—	—	—	48	200	0	—	—	33	—	—	—	—	—	—	—	—	281
172	161	140	0	1	—	0	133	—	0	—	0	—	—	—	—	—	—	—	274
173	92	114	0	0	—	12	5	—	—	138	—	—	—	0	—	0	—	—	269
174	38	72	—	—	0	128	0	—	—	66	—	—	—	—	—	—	—	—	266
175	39	95	0	0	—	0	11	—	0	151	0	—	—	0	—	—	0	—	257
176	32	107	0	0	0	107	0	—	—	—	—	—	—	—	—	—	—	—	214
177	45	131	0	0	0	0	40	—	0	—	—	—	—	—	0	—	—	—	171
178	180	67	0	0	—	0	0	—	—	48	—	—	—	—	—	—	—	—	115
179	156	77	0	0	—	0	0	—	—	37	—	—	—	—	—	—	—	—	114
180	36	96	—	—	0	0	0	—	—	6	—	—	—	—	—	—	—	—	102
181	158	101	0	0	0	0	0	—	0	—	—	—	—	—	—	—	—	—	101
182	175	—	0	—	—	0	0	0	—	36	0	—	0	—	—	—	—	—	36

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